Summit WM Getting Started Guide
Software Version 5.1

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About this guide

The purpose of the Getting Started Guide is to assist you in deploying Extreme Networks® Summit® WM Wireless LAN (WLAN) Solution by mapping preparation, installation, and configuration tasks into a logical and efficient flow.

You can use this guide independently of other documents. However, if you are looking for detailed information on any aspect of the system's installation, configuration, or management, use this guide in conjunction with the *Summit WM User Guide*.

This guide is based on the following product families:

- Summit WM2000 Controller
- Summit WM200 Controller
- Summit WM20 Controller
- Summit WM1000 Controller
- Summit WM100 Controller

Who should use this guide

This guide is written for the users of Summit WM Wireless LAN (WLAN) Solution. You should be familiar with computer networking concepts to use this guide.

What is in this guide

This contents in this guide are organized under the following chapters:

- "About this guide"– Describes the purpose, the target audience and the architecture of this guide.
- Chapter 1, "Summit WM Controller, Access Points, and Software Solution" – Captures the essential concepts of the solution.
- Chapter 2, "Summit WM Controller configuration"– Explains how to configure the Summit WM Controller's settings in order to make it operational.
- Chapter 3, "Physical ports configuration"– Describes how to configure the Summit WM Controller's physical ports.
- Chapter 4, "Routing Configuration"– Explains how to configure the static and OSPF routings on the Summit WM Controller's physical ports.
- Chapter 5, "Configuring DHCP, DNS and IAS services"– Describes how to configure DHCP, DNS and IAS services on Windows 2003 Server. In addition, the chapter explains how to configure DHCP service on a Linux-based server.
- Chapter 6, "Wireless AP configuration"– Explains how to configure and manage the Wireless APs through the Summit WM Controller.
- Chapter 7, "WM-AD configuration"– Describes how to create and configure WM-AD via the Summit WM Controller.

- Chapter 8, "Availability and Mobility configuration" – Explains how to configure availability and mobility features via the Summit WM Controller.

Formatting conventions

The document uses the following formatting conventions to make it easier to find information and follow procedures:

- Bold text is used to identify components of the management interface, such as menu items and section of pages, as well as the names of buttons and text boxes.
  - For example: Click **Logout**.
- Monospace font is used in code examples and to indicate text that you type.
  - For example: Type `https://<WM-address>[:mgmt-port>]`
- The following symbols are used to draw your attention to additional information:

NOTE

Notes identify useful information such as reminders, tips, or other ways to perform a task.

CAUTION

Cautionary notes identify essential information, which if ignored can adversely affect the operation of your equipment or software.

WARNING!

Warning notes identify essential information that if ignored can lead to personal injury or harm.

Document feedback

If you have any problems using this document, please contact your next level of support:

- Extreme Networks® employees should contact the interactive Customer Engagement Team (i-CET).
- Customers should contact the Extreme Networks Customer Support Center.

When you call, please have the following information ready. This will help us to identify the document that you are referring to.

- Title – *Summit WM Getting Started Guide, Software Version 5.1*.
- Part Number – 120428-00 Rev 02.

1 Summit WM Controller, Access Points, and Software Solution

This chapter describes the essential concepts of Summit WM Controller, Access Points, and Software Solution.

The topics in this chapter are organized as follows:

- Conceptual model
- Collecting information for installation

Conceptual model

The Summit WM Controller, Access Points, and Software Solution is an enterprise WLAN solution that consists of the following components:

- Summit WM Controller and Summit WM Software
- Wireless AP

Summit WM Controller

The Summit WM Controller is a high-performance network device that provides several functions, including centralized management and configuration of Wireless APs, user authentication, and advanced radio frequency management.

The Summit WM Controller is driven by the Summit WM Software. The software resides on the Summit WM Controller and provides an intuitive web-based interface — Summit WM Graphical User Interface (GUI) — to enable you to manage the entire wireless network from a laptop, or a PC connected to the network. A command line interface is also available to manage the wireless network.

The Summit WM Controller is a full-functioning dynamic router that aggregates and coordinates all Wireless APs and manages client devices.

Some key features of the Summit WM Controller are provided in the following sections:

Web-based centralized management of Wireless APs

The Summit WM Controller enables you to monitor and manage Wireless APs from a centralized web-based interface called the Summit WM GUI. You can separately configure, enable, or disable each Wireless AP from the Summit WM Controller using the Summit WM GUI.

Virtualized user segmentation

The Summit WM Controller allows you to create and manage unique WM Access Domain Services (WM-AD) that enables you to group specific mobile users, devices and applications on the basis of

policy class in order to provide unique levels of service, access permissions, encryption, and device authorization.

A WM-AD segment is a virtual network and each Wireless AP can support multiple WM-AD segments.

WM-AD optimizes the dynamic nature of WLAN mobility as WM-AD groups can follow users without depending on the physical configuration of the network.

The following is the list of Summit WM Controllers and the number of WM-ADs they can support.

- Summit WM2000 Controller: 64 WM-ADs
- Summit WM200 Controller: 32 WM-ADs
- Summit WM1000 Controller: 50 WM-ADs
- Summit WM100 Controller: 32 WM-ADs
- Summit WM20 Controller: 8 WM-ADs

Authentication and encryption

The Summit WM Controller and Wireless AP work together to support comprehensive authentication, encryption, and intrusion detection capabilities. A range of robust security features based upon the 802.11 and WPA2 standards ensure that your network stays protected.

802.1X mechanism in conjunction with RADIUS and pre-shared key authentication ensure that only authorized users can access the network.

Other features include Captive Portal for redirected web-based authentication.

Intrusion detection

The Summit WM Controller allows you to configure Wireless APs to detect rogue access points on the network by scanning the radio frequency (RF) space at specific intervals. Scan results are then forwarded to the Summit WM Controller; the Summit WM Controller processes and presents the data centrally. Rogue detection data can be viewed via the Summit WM GUI.

Automatic assignment of IP addresses to the client devices

The Summit WM Controller has built-in DHCP server that assigns IP addresses to the client devices. The Summit WM Controller is also capable of working with an external DHCP server.

Web authentication

The Summit WM Controller has a built-in Captive Portal capability that allows Web authentication (Web redirection) to take place. The Summit WM Controller is also capable of working with external Captive Portal.

Wireless AP

Wireless APs are enterprise-class access points that deliver secure wireless access via the layer 3 tunnel for enterprise deployments. They provide advanced RF capabilities, security, reliability and scalability.

The Wireless APs provide an unmatched level of flexibility and performance for complex, time-sensitive functions including QoS, encryption and rogue AP detection.

The Wireless AP physically connects to a LAN infrastructure and establishes an IP connection with the Summit WM Controller. The Wireless AP has no user interface — instead the Wireless AP is managed through the Summit WM GUI. Global functions like configuration, roaming, security management, and policy control are managed via the Summit WM GUI.

All communication between the Summit WM Controller and the Wireless AP is carried out using a UDP-based protocol. The IP traffic, coming from the Wireless AP is encapsulated, and is directed to the Summit WM Controller. The Summit WM Controller decapsulates the packets and routes them to the appropriate destinations while managing sessions and applying policy.

The Wireless AP comes in the following three variants:

- Altitude™ AP
- Outdoor AP (Siemens brand of outdoor AP)
- Altitude 802.11n AP

Altitude AP

The Altitude AP is available in the following two models:

- **Altitude 350-2i** – Internal antenna, internal dual (multimode) diversity antennas
- **Altitude 350-2d** – External antenna (dual external antennas), RP-SMA connectors

NOTE

Since the Altitude AP is meant for indoor environments, it is also referred to as Indoor AP.

Outdoor AP

The Siemens branded outdoor AP (OAP) can be managed by Summit WM controller. The following models of Siemens branded Outdoor APs shall be managed by Summit WM. These are dual radio 11a/b/g access points designed for outdoor and harsh environment use.

- SEN 2650 (Internal antennas)
- SEN 2660 (External antennas)
- A&D W786-2HPW (Internal antennas- with Ethernet)
- A&D W786-2HPW (Internal antennas- with Fiber Optic)
- A&D W786-2HPW (External antennas- with Ethernet)
- A&D W786-2HPW (External antennas- with Fiber Optic)The Altitude AP is meant for indoor environments. It can be mounted on walls or ceilings, using special brackets, and can be kept completely out of sight.

The Outdoor AP enables you to extend your Wireless LAN beyond the confines of indoor locations. They are resistant to harsh outdoor conditions and extreme temperatures. Using the advanced wireless distribution feature of Summit WM Wireless LAN, the Outdoor AP can extend your Wireless LAN to outdoor locations without Ethernet cabling. A mounting bracket is available to enable quick and easy mounting of the Outdoor APs to walls, rails and poles.

NOTE

Although the Outdoor AP is meant for outdoor environments, it can also be deployed in indoor environments.

The Outdoor AP supports the 802.11a, 802.11g and full backward compatibility with legacy 802.11b devices.

NOTE

Since the Outdoor AP is meant for outdoor environments, it is also referred to as Outdoor AP.

NOTE

The configuration process is same for the Altitude AP and the Outdoor AP, and is done via the Summit WM Controller.

Altitude 802.11n AP

The Altitude 802.11n AP is an IEEE 802.11n (draft)-compliant access point that offers significant increase in data throughput and coverage range without additional bandwidth or transmit power. With both 2.4 GHz and 5 GHz 802.11n (draft) standard radio modules, the 802.11n AP delivers total data rates of up to 300 Mbps. Given that the improved throughput of 300 Mbps will be spread over a number of simultaneous users, the performance of 802.11n AP will be close to that of a wired 100 Mbps Ethernet connection — the standard for desktop connectivity. With the 802.11n AP, the mobile users get the experience similar to wired networks while accessing high-bandwidth data, voice, and video applications. For more information, see "Altitude 802.11n AP" on page 68.

The Altitude 802.11n AP is available in the following two models:

- **Altitude 450** – 3 internal antennas
- **Altitude 451** – 3 internal antennas, RP-SMA connectors

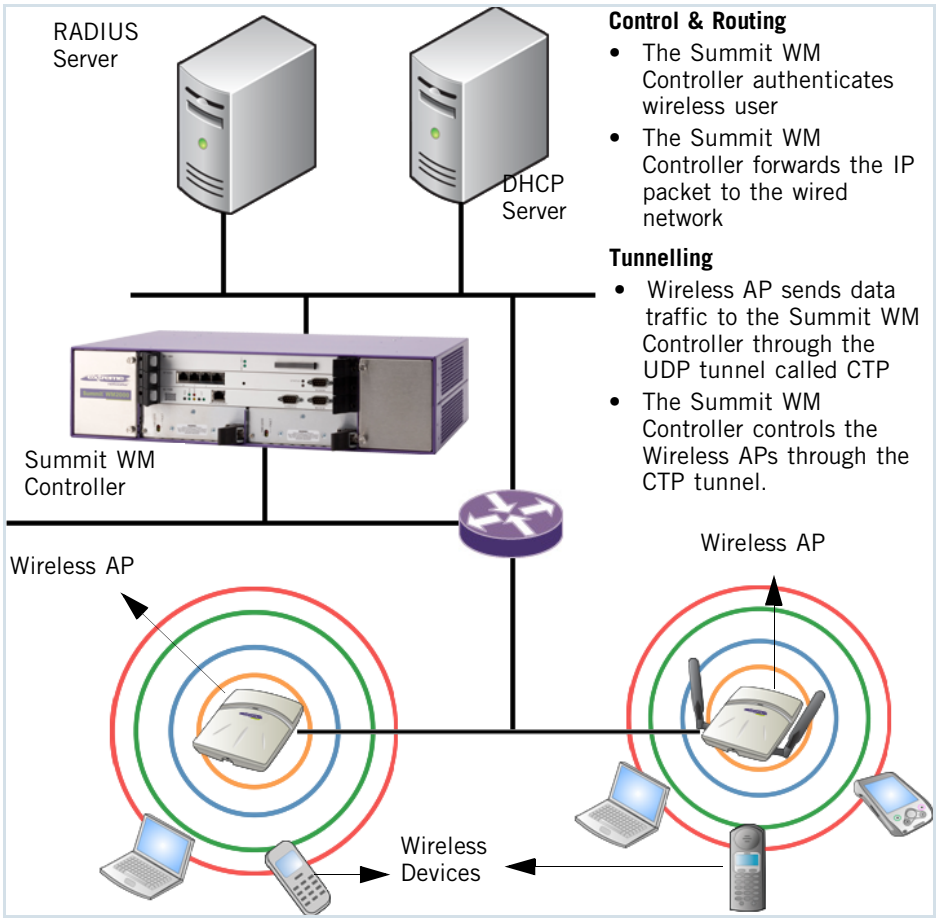
WDS

A Wireless Distribution System (WDS) enables you to expand the wireless network by interconnecting the Wireless APs through wireless links in addition to the traditional method of interconnecting Wireless APs via a wired network. The WDS deployment is ideally suited for locations, where installing ethernet cabling is too expensive, or physically impossible.

Summit WM Controller, Access Points, and Software Solution topology and network elements

The following figure illustrates a typical configuration with a single Summit WM Controller and two Wireless APs, each supporting a wireless device. A RADIUS server on the network provides user authentication, and a DHCP server assigns IP addresses to the Wireless APs. Network inter-connectivity is provided by the infrastructure routing and switching devices.

Figure 1: Summit WM Wireless LAN topology


RADIUS Server
DHCP Server
Control & Routing
• The Summit WM Controller authenticates wireless user
• The Summit WM Controller forwards the IP packet to the wired network
Tunnelling
• Wireless AP sends data traffic to the Summit WM Controller through the UDP tunnel called CTP
• The Summit WM Controller controls the Wireless APs through the CTP tunnel.
Summit WM Controller
Wireless AP
Wireless AP
Wireless Devices

The Summit WM Controller supports the following network elements.

- **RADIUS Server (Remote Access Dial-in User Service) –** An authentication server that assigns and manages ID and Password protection throughout the network. The RADIUS server system can be set-up for certain standard attributes such as filter ID, and for the vendor specific attributes (VSAs). The Summit WM Controller supports external RADIUS server.
- **DHCP Server (Dynamic Host Configuration Protocol) –** A server that assigns the IP addresses, gateways, and subnet masks dynamically. The external DHCP server depicted in Figure 2-1 is primarily utilized to provide addresses to infrastructure equipment such as APs. The IP addresses to the mobile devices are provided by the built-in DHCP server of Summit WM Controller. You can also configure the Summit WM Controller to relay DHCP requests to the external DHCP server.
- **SLP (Service Location Protocol) –** A service discovery protocol that allows computers and other devices to find services in a local area network without prior configuration. The client applications

are user agents and services that are advertised by a service agent. In larger installations, a directory agent collects information from service agents and creates a central repository. SLP is one of the several modes that the Summit WM Controller uses to discover the Wireless APs.

- **Domain Name Server –** A server that translates the domain names into IP addresses. The DNS is used as an alternative mechanism for the automatic discovery process. The Summit WM Controller, its software, and the APs rely on the DNS for Layer 3 deployments. In addition, DNS is utilized for the static configuration of APs. The Summit WM Controller can be registered in DNS to provide DNS assisted AP discovery.

Discovery mechanism in Summit WM Controller, Access Points, and Software Solution

The Summit WM Controller, Access Points, and Software Solution provides auto-discovery capabilities between the following components:

- Wireless APs and Summit WM Controller
- Mobility manager and mobility agents (For more information, see Chapter 8, "Availability and Mobility configuration.")

Discovery mechanism between Wireless AP and Summit WM Controller

The Wireless APs discover the Summit WM Controller by one of the following modes:

- SLP (Multicast and Unicast) – For more information, see SLP's description in "Summit WM Controller, Access Points, and Software Solution topology and network elements" on page 13.
- DNS – For more information, see Domain Name Server's description in "Summit WM Controller, Access Points, and Software Solution topology and network elements" on page 13.
- Static IP address configuration – Summit WM Controller's IP address is defined in Wireless AP configuration. For more information, see "Configuring static IP address for Wireless APs" on page 77.

Discovery mechanism between mobility manager and mobility agents

The mobility agents discover the mobility manager by one of the following modes:

- SLP with DHCP Option 78 – The mobility agent on each Summit WM Controller discovers the address of the mobility manager using DHCP Option 78.
- Direct IP address option – Defined while configuring the mobility agent. By explicitly defining the manager's IP address while configuring the agents, enables the manager and agents to find each other directly without using the SLP discovery mechanism.

DHCP in Summit WM Controller, Access Points, and Software Solution

DHCP usage has four scenarios in Summit WM Controller, Access Points, and Software Solution:

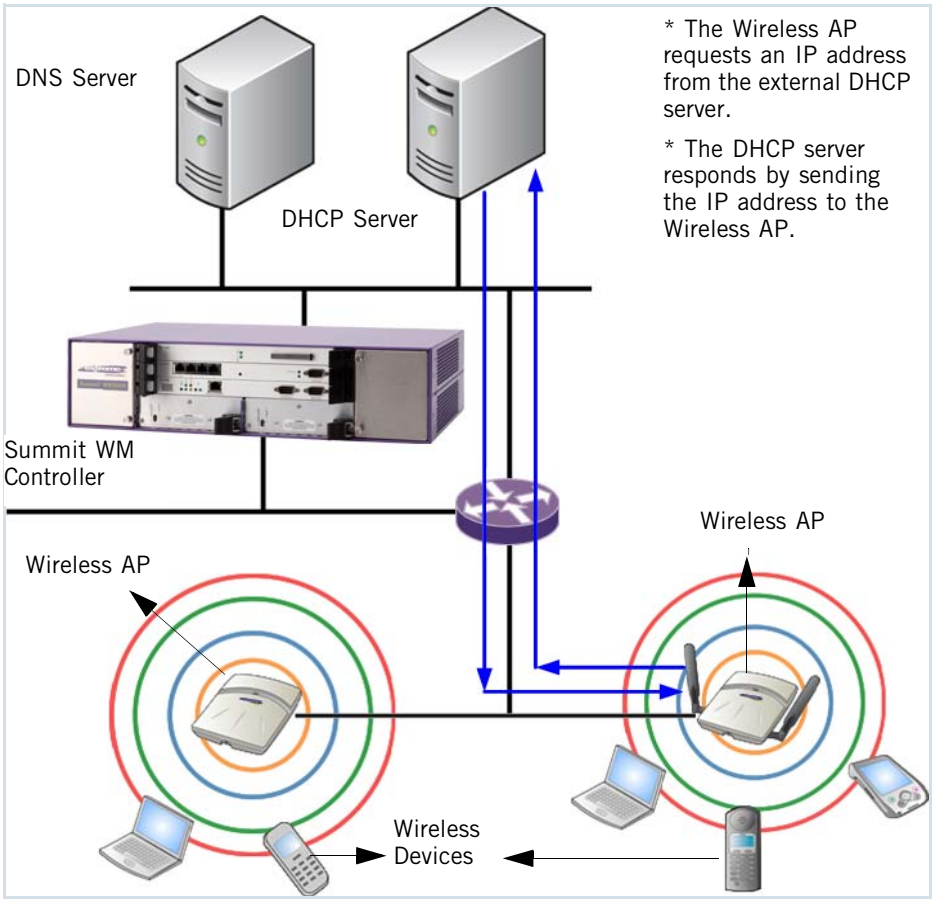
- DHCP for Wireless APs
- DHCP for WM-AD

- DHCP relay for WM-AD
- DHCP for traffic bridged locally at Wireless AP

The following sections explain the four scenarios with the help of graphical illustrations.

DHCP for Wireless APs

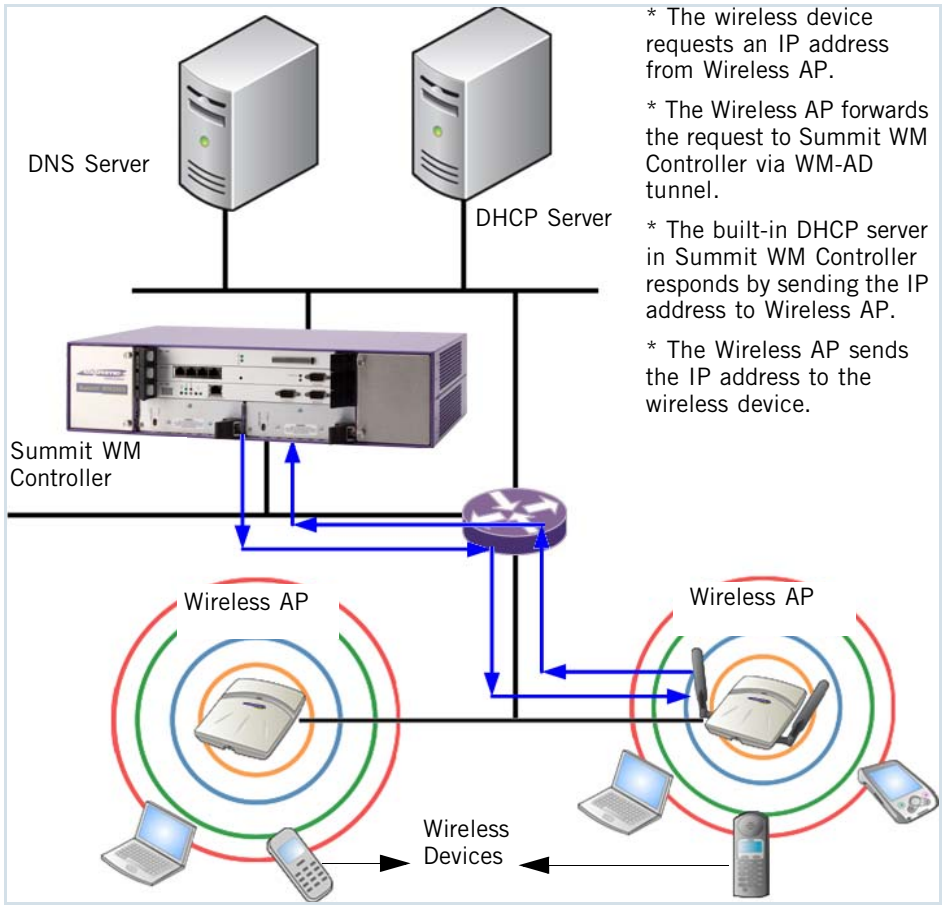
Figure 2: DHCP for Wireless APs


DNS Server
DHCP Server
* The Wireless AP requests an IP address from the external DHCP server.
* The DHCP server responds by sending the IP address to the Wireless AP.
Summit WM Controller
Wireless AP
Wireless AP
Wireless Devices

You can use Windows 2003 server, amongst others, for deploying DHCP service for Wireless APs. For more information, see "DHCP service configuration" on page 53.

DHCP for WM-AD

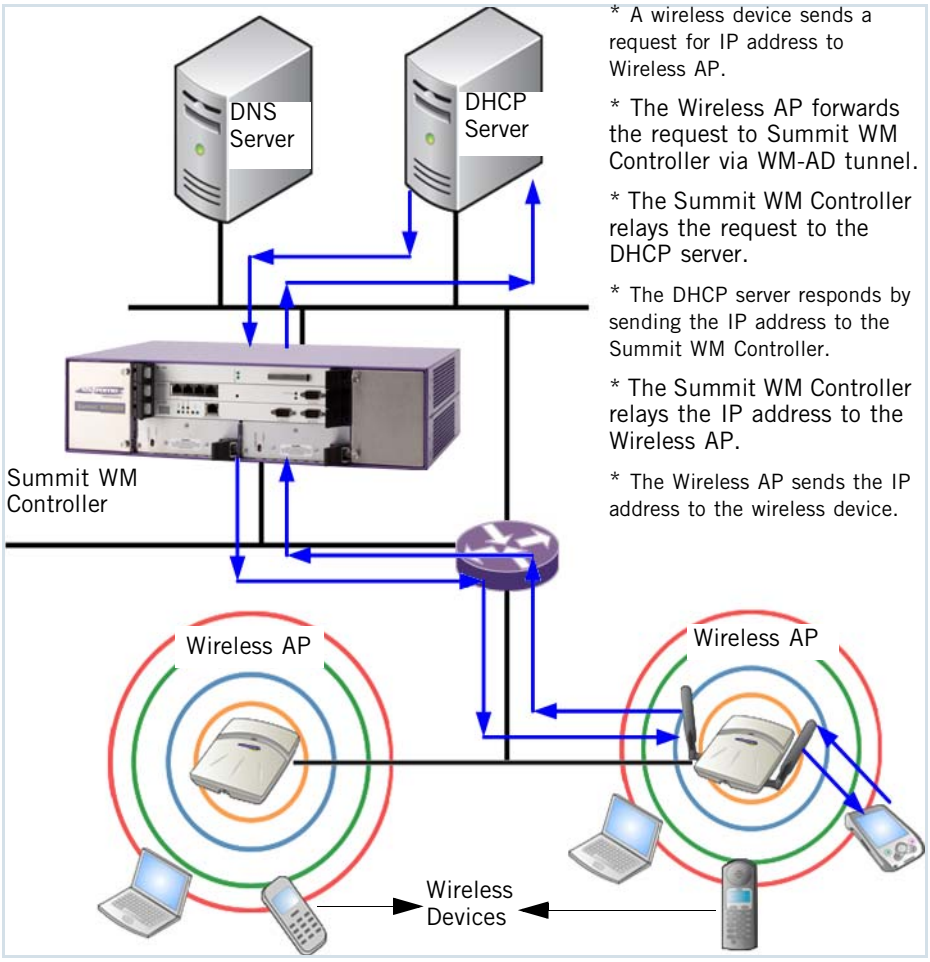
Figure 3: DHCP for WM-AD


DNS Server
DHCP Server
* The wireless device requests an IP address from Wireless AP.
* The Wireless AP forwards the request to Summit WM Controller via WM-AD tunnel.
* The built-in DHCP server in Summit WM Controller responds by sending the IP address to Wireless AP.
* The Wireless AP sends the IP address to the wireless device.
Summit WM Controller
Wireless AP
Wireless AP
Wireless Devices

The DHCP configuration for WM-AD is done via Summit WM Controller. For more information, see "Creating and configuring a Routed WM-AD" on page 93.

DHCP relay for WM-AD

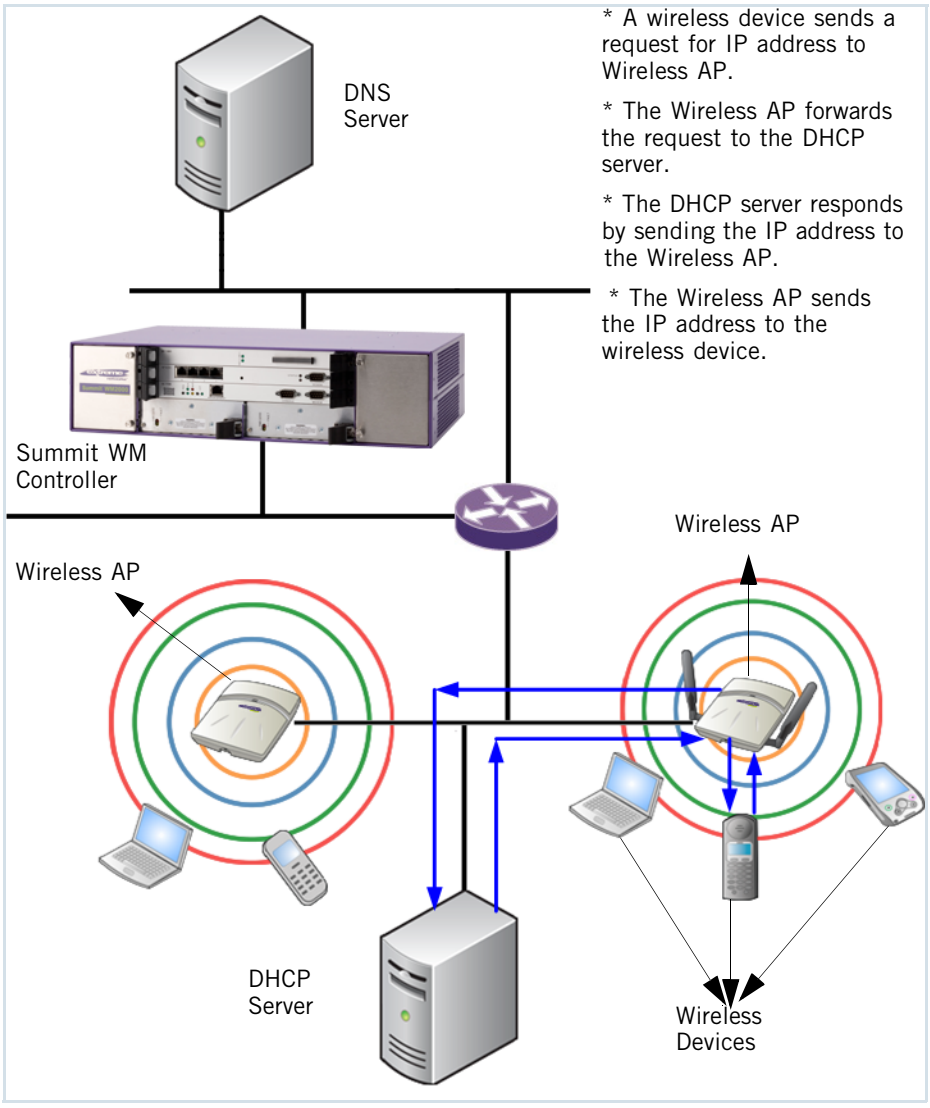
Figure 4: DHCP relay for WM-AD


DNS Server
DHCP Server
Summit WM Controller
Wireless AP
Wireless AP
Wireless Devices
* A wireless device sends a request for IP address to Wireless AP.
* The Wireless AP forwards the request to Summit WM Controller via WM-AD tunnel.
* The Summit WM Controller relays the request to the DHCP server.
* The DHCP server responds by sending the IP address to the Summit WM Controller.
* The Summit WM Controller relays the IP address to the Wireless AP.
* The Wireless AP sends the IP address to the wireless device.

The DHCP relay configuration is done via Summit WM Controller. For more information, see "Creating and configuring a Routed WM-AD" on page 93.

DHCP for traffic bridged locally at Wireless AP

Figure 5: DHCP for traffic bridged locally at Wireless AP


* A wireless device sends a request for IP address to Wireless AP.
* The Wireless AP forwards the request to the DHCP server.
* The DHCP server responds by sending the IP address to the Wireless AP.
* The Wireless AP sends the IP address to the wireless device.
DNS Server
Summit WM Controller
Wireless AP
Wireless AP
DHCP Server
Wireless Devices

The DHCP relay configuration is done via Summit WM Controller. For more information, see "Creating and configuring a Bridge Traffic Locally at AP WM-AD" on page 95.

Summit WM Controller's physical description

This section provides a physical description of the Summit WM Controller.

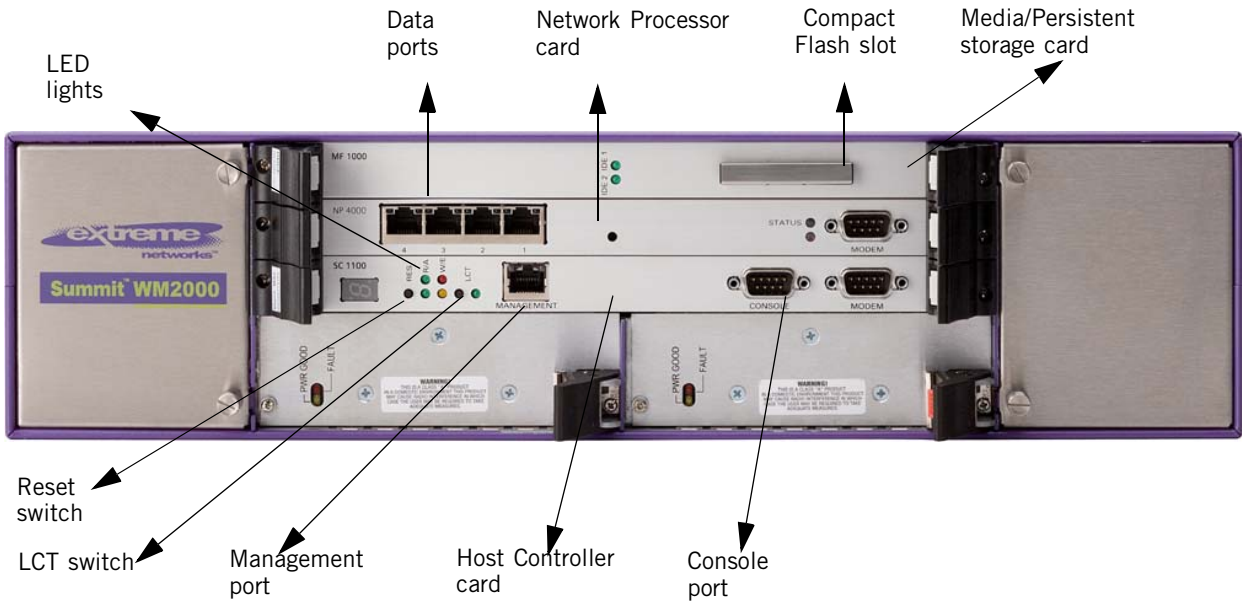
Summit WM200/2000 Controller front panel

The Summit WM200/2000 Controller is composed of the following three cards:

- Media/Persistent Storage Card
- Network Processor Card
- Host Supervisor Card

The following figure identifies the main components on the front panel of Summit WM200/2000 Controller.

Figure 6: Summit WM200/2000 Controller front panel



Summit WM200/2000 Controller data port cabling specification

The Summit WM200/2000 Controller data ports have copper connectors.

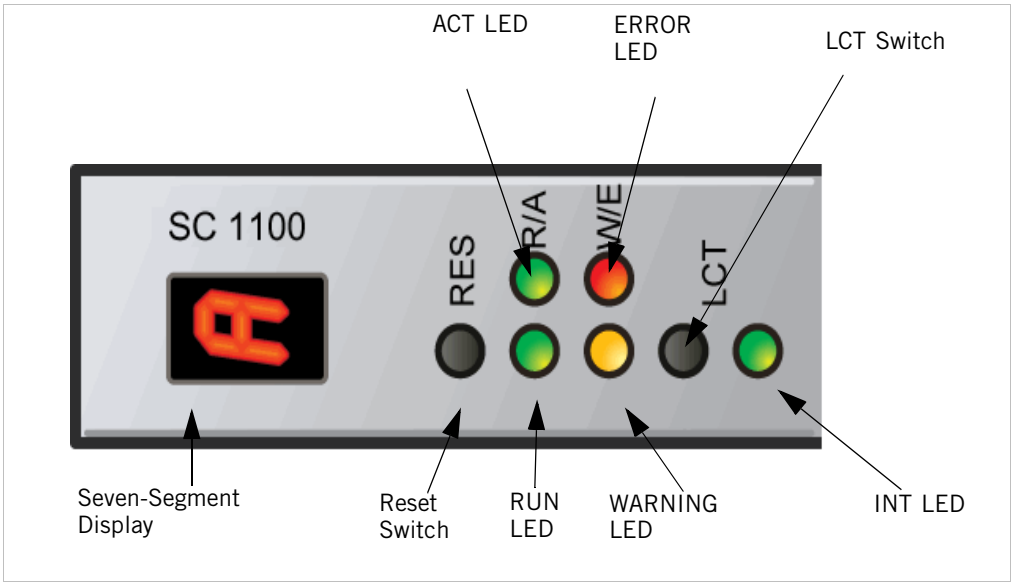
NOTE

If your infrastructure does not allow a copper connection, you should get a Gigabit Media Converter to convert the copper connection to a fibre optic connection. For example, you can use Netgear GC102 converter that receives the copper connection and outputs traffic via the fibre optic connector.

Summit WM200/2000 Controller LEDs

The Summit WM200/2000 Controller has five LED lights and two switches on its front panel.

Figure 7: Summit WM200/2000 Controller's LED lights and switches



The description of the LED states and switches is provided below:

- Reset Switch – Reboots the system.
- RUN LED – Indicates the CPU's initialization has completed and the system is ready to provide application level services.
- ACT LED – Indicates the system's software is in active running state.
- WARNING/ERROR LEDs – Indicate a problem in the running state of the system.
  - Whenever either of the alarm LEDs is lit, the seven-segment display provides the corresponding code point for the error indication. When the system is fully active and running, the console displays the letter **A** as seen in Figure 7.
- LCT Switch – The LCT button is used during the manufacturing process and is inactive otherwise.
- INT LED – Not used in the current release.

Summit WM200/2000 Controller's LED states and Seven Segment Display (SSD) codes

Firmware initialization

Table 1: LED states and SSD codes during firmware initialization

Active LED	Warning LED	Error LED	SSD Codes	Condition
Green			0	The processor has started; and the firmware has taken control.
Green			3	The Host Supervisory Card has failed to download Bootloader from Flash.
Green			4	The system is checking firmware consistency.

Table 1: LED states and SSD codes during firmware initialization (Continued)

Active LED	Warning LED	Error LED	SSD Codes	Condition
Green			5	The system is formatting memory.
Green			6	The system is initializing load device. **Note:** If the SSD code is stuck at 6 for more than a minute, it implies that the Network Processor Card is installed in wrong slot.
Green			9	The system is loading subsystem.
Green			b	The system is starting the operation system. The system is active.

NOTE

Although the Active LED will be lit Green during the firmware initialization, this LED state is irrelevant to the SSD display or the condition. You must ignore the LED state during the firmware initialization.

Application initialization:

Table 2: LED states and SSD codes during application initialization

Active LED	Warning LED	Error LED	SSD Code	Condition
Green			0	Application initialization started.
Green			1	Forwarding Engine initialization complete. Application initialization.
Green			A	Application initialization complete. System active.
Green			H	System halted. Administrator requested halting of system.

Warning conditions:

Table 3: LED states and SSD codes during warning conditions

Active LED	Warning LED	Error LED	SSD Code	Condition
Green	Yellow		1	High temperature reached.
Green	Yellow		2	Fan unit failure. Rotation counter indicates zero speed for one of the lateral trays. May be the result of fan tray removal.
Green	Yellow		3	Power supply failure. Failed to detect one of the power supplies. May be the result of the fan tray removal of one of the power supplies.
Green	Yellow		4	FDD low sector count (40 backup sectors remaining).
Green	Yellow		5	FDD extremely low sector count (20 backup sectors remaining)

Error conditions:

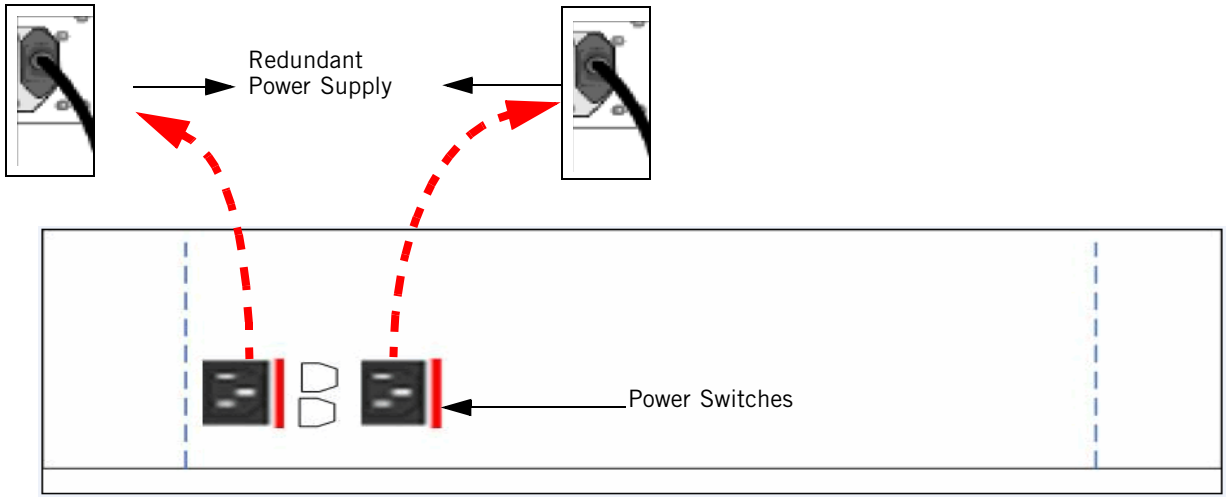
Table 4: LED states and SSD codes during error conditions

Active LED	Warning LED	Error LED	SSD Code	Condition
Green		Red	1	Failed to identify FDD. Possibly due to removal of FDD card.
Green		Red	2	Failed to initialize NPE card.
Green		Red	3	Critical threshold reached (95C for NPE). The system will reboot.
Green		Red	4	Full fan assembly failure (both trays). The system will reboot.
Green		Red	5	Application initialization failure. Startup manager failed to initialize all the components of the system. The system will reboot.
Green		Red	6	Lost connectivity with ethernet interface. Possible failure of NPE card. The system will reboot.
Green		Red	7	MF 1000 card failure. Backup sectors exhausted.
Green		Red	8	NP 4000 card initialization failure. Firmware self test (BIST) has detected failure in one or more components (memory, bus, interconnects)

Summit WM200/2000 Controller back panel

The following figure identifies the main components on the back panel of Summit WM200/2000 Controller.

Figure 8: Summit WM200/2000 Controller back panel

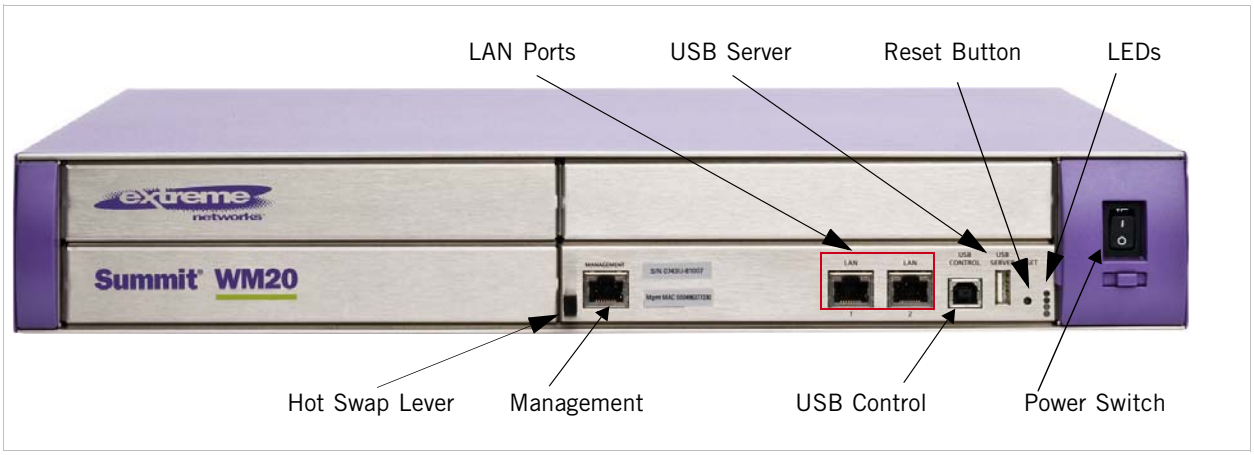


NOTE

The hardware for the Summit WM200 Controller and the Summit WM2000 Controller are identical. For more information, see "Summit WM200/2000 Controller front panel" on page 19 and "Summit WM200/2000 Controller back panel" on page 22.

Summit WM20 Controller front panel

Figure 9: Summit WM20 Controller front panel



NOTE

The hot swap button's operation is not supported in the current release. Pulling the hot swap button to open position will not affect the normal operation if the Summit WM20 Controller is already running. However, if you attempt to reboot the Summit WM20 Controller with the hot swap button in open position, the controller will fail to boot.
If you pull the hot swap button to open position while the Summit WM20 Controller is in operation, the fourth LED from the top will light up. For more information, see "Summit WM20 Controller's LEDs" on page 24.

Summit WM20 Controller data port cabling specification

The Summit WM20 Controller's data ports have copper connectors.

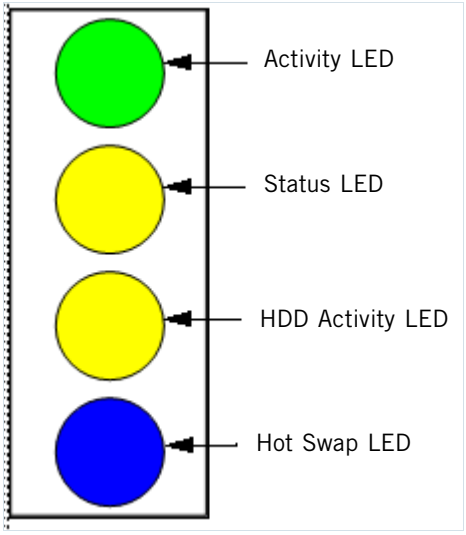
NOTE

If your infrastructure does not allow the copper connection, you must get a Gigabit Media Converter to convert the copper connection to a fibre optic connection. For example, you can use Netgear GC102 converter that receives the copper connection and outputs traffic via the fibre optic connector.

Summit WM20 Controller's LEDs

The Summit WM20 Controller has four lights on its front panel.

Figure 10: Summit WM20 Controller LED lights



The functional definitions of the Summit WM20 Controller's LEDs are provided below:

- ACTIVITY LED – Indicates the CPU activity, including the amount of traffic carried to and from the Wireless APs.
- STATUS LED – Indicates the normal state of the Summit WM Controller as seen by the system's software. This LED covers all stages of the Summit WM Controller, ranging from restarting, to shutting-down. As long as the Summit WM Controller is running normally, this LED will remain lit.
- HDD Activity LED – Is hardware controlled to report Hard Drive Device (HDD) activity.
- Hot Swap LED – Indicates that the hot swap lever on the Summit WM Controller has been pulled. For information, see "Summit WM20 Controller front panel" on page 23.

NOTE

The hot swap lever is not enabled in the current release. Pulling the hot swap lever will not affect the normal operation if the Summit WM20 Controller is already running. However, if you attempt to reboot the Summit WM20 Controller with the hot swap lever pulled out, the controller will fail to reboot. If you pull the hot swap lever while the Summit WM20 Controller is in operation, the Hot Swap LED will light up.

Summit WM20 Controller's LED states

The description of the Summit WM20 Controller's LED states is provided below.

Table 5: Summit WM20 Controller's LED states and their description

Status LED	Activity LED	Condition
Blinking Amber	Green	Power up (BIOS, POST)
Off	Green	System Booting (Failed to boot)
Off	Green	Startup Manager: Task Started

Table 5: Summit WM20 Controller's LED states and their description

Status LED	Activity LED	Condition
Solid Amber	Blinking Amber	Startup Manager: Task Completes Startup — All Components Active
Solid Amber	Blinking Green	A Component Fails to Start or Needs Restarting (Startup Manager Task Retrying That Component)
Green	Blinking Red	Possible Hardware Failure (No More Retries)
Solid Red	Off	A Component Fails (No More Retries)
Blinking Red	Off	System About To be Reset By Watchdog
Solid Red	Solid Red	System Shutdown / Halt (Requires Manual Reboot)

NOTE

LED 3 – HDDActivity LED – Orange/Amber
• HDDActivity LED is off when HDD is not in use
• HDDActivity LED is on when HDD is in use
LED 4 – Hot Swap LED – Blue
• Solid Blue when the hot swap button is pulled out

Summit WM20 Controller back panel

Figure 11: Summit WM20 Controller back panel

Summit WM1000 Controller front panel

The Summit WM1000 Controller doesn't have any component on the front panel except two LED lights. These two LED lights are:

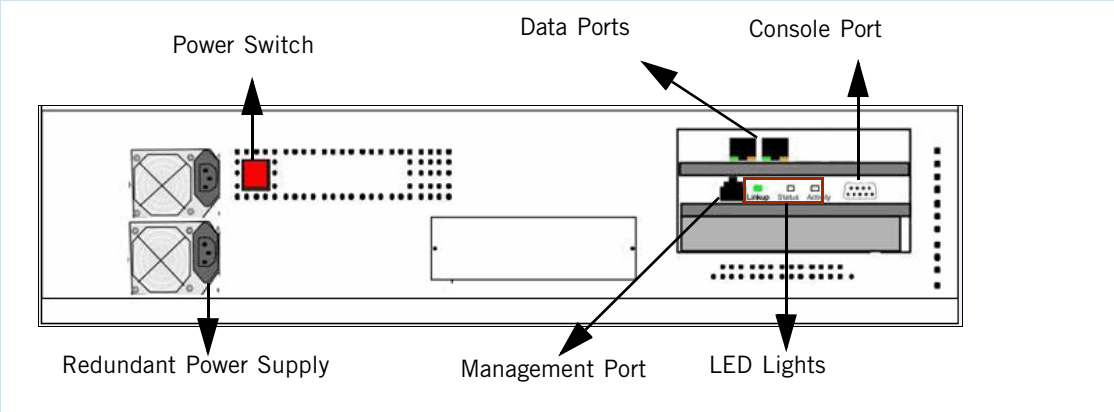
- STATUS LED – For more information, see the STATUS LED description in "Summit WM1000 Controller back panel" on page 26.
- ACTIVITY LED – For more information, see the ACTIVITY LED description in "Summit WM1000 Controller back panel" on page 26

These two LED lights are also located on the back panel of the Summit WM1000 Controller.

Summit WM1000 Controller back panel

The following figure identifies the main components on the back panel of Summit WM1000 Controller.

Figure 12: Summit WM1000 Controller back panel



NOTE

The Summit WM1000 Controller may have a standard power supply (one power supply) or a redundant power supply (two power supplies).

Summit WM1000 Controller data port cabling specification

The data ports have MT-RJ fiber optic connectors. Depending upon your network infrastructure, you must get any one of the following cables:

- MT-RJ connector to MT-RJ connector
- MT-RJ connector to SC connector
- MT-RJ connector to LC connector
- MT-RJ connector to any other connector that is appropriate for your infrastructure

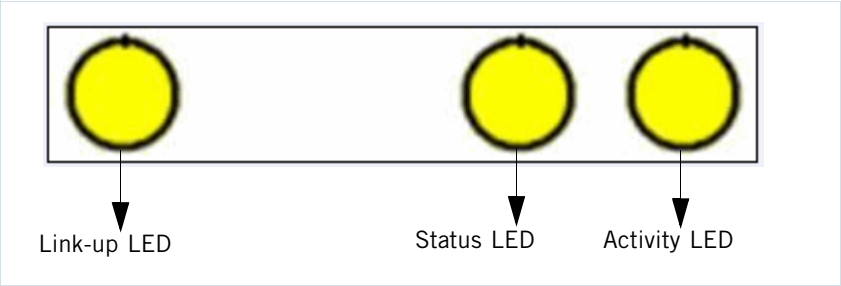
NOTE

If your infrastructure does not allow the optic fiber connection, you must get a Gigabit Media Converter to convert the fiber connection to a copper Gigabit connection. For example, you can use Netgear GC102 converter that receives the fiber connection and outputs traffic via the RJ45 copper port (Unshielded Twisted Pair - UTP).

Summit WM1000 Controller LEDs

The Summit WM1000 Controller has three LED lights on its back panel.

Figure 13: Summit WM1000 Controller LED Lights



The description of the LED states is provided below:

- LINK-UP LED – Displays the link status of management port Ethernet link as seen by the system's software. This LED is located only on the back panel of the Summit WM1000 Controller.
- STATUS LED – Indicates the normal state of the Summit WM Controller as seen by the system's software. This LED covers all stages of the Summit WM Controller, ranging from restarting, to shutting-down. As long as the Summit WM Controller is running normally, this LED will remain lit. The STATUS LED is located on the back panel as well as the front panel.
- ACTIVITY LED – Indicates the amount of traffic carried to and from the Wireless APs. The ACTIVITY LED is located on the back panel as well as the front panel.

Summit WM100 Controller front panel

The Summit WM100 Controller does not have any component on the front panel except two LED lights.

The description of the LED states is provided below:

- STATUS LED– For more information, see the STATUS LED description in "Summit WM1000 Controller back panel" on page 26.
- ACTIVITY LED – For more information, see the ACTIVITY LED description in "Summit WM1000 Controller back panel" on page 26.

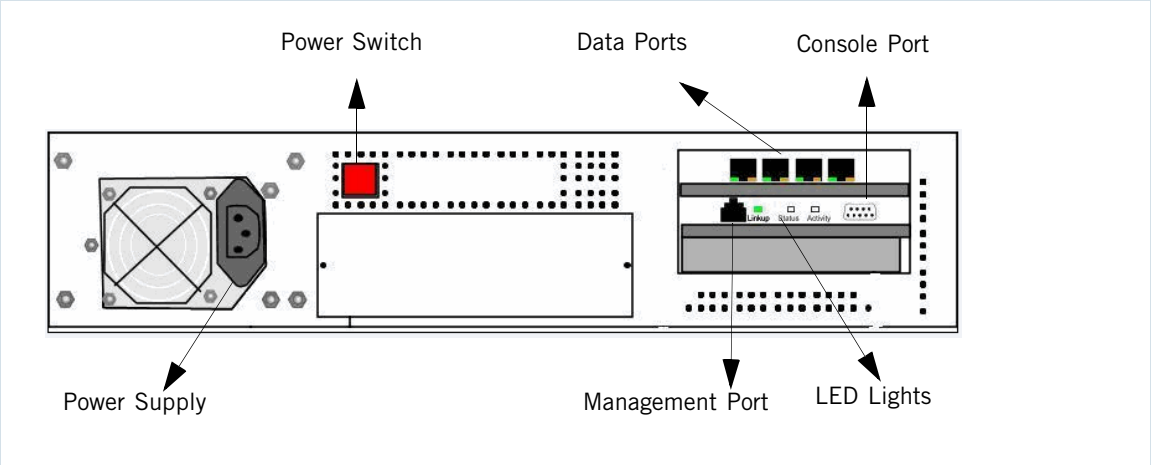
NOTE

The STATUS LED is located on the back panel as well as the front panel of the Summit WM100 Controller.

Summit WM100 Controller back panel

The following figure identifies the main components on the back panel of Summit WM100 Controller.

Figure 14: Summit WM100 Controller back panel



NOTE

The Summit WM100 Controller has the same number of LED lights on the back panel as the Summit WM1000 Controller. The LED description of their state is also identical to WM100. For information on Summit WM100 Controller LEDs' states, see the descriptions of STATUS LED and ACTIVITY LED in "Summit WM1000 Controller back panel" on page 26.

NOTE

Summit WM100 Controller may have a standard power supply (one power supply) or a redundant power supply (two power supplies).

Summit WM100 Controller data port cabling specification

The Summit WM100 Controller data ports have copper connectors.

NOTE

If your infrastructure does not allow the copper connection, you must get a Gigabit Media Converter to convert the copper connection to a fibre optic connection. For example, you can use Netgear GC102 converter that receives the copper connection and outputs traffic via the fibre optic connector.

Collecting information for installation

You should use the following table to document all the pertinent information about the Summit WM Controller before starting the installation process.

Some of the information listed in the table may not be relevant to your network configuration. You should only record the information that is pertinent to your network configuration.

Table 6: Information gathering table

Configuration data	Description	Your entry
Accessing the Summit WM Controller for the first time	• **Unused IP address in the 192.168.10.0/24 subnet** – This IP address must be assigned to the Ethernet port of your laptop computer. You can use any IP address between 192.168.10.2 and 192.168.10.255. • **Factory default IP address of Summit WM Controller** – The factory default IP address is https://192.168.10.1:5825. You must type this IP address in the address bar of your Web browser when you access the Summit WM Controller for the first time. • **Login Information** – The login information is as follows: > **User Name**: `admin` > **Password**: `abc123`	
Management Port information	• **Hostname** – Specifies the name of the Summit WM Controller. • **Domain** – Specifies the IP domain name of the enterprise network. • **Management IP Address** – The new IP address for the Summit WM Controller's management port. Change the value in this text box to the IP address assigned to the Summit WM Controller's management port by your network administrator. • **Subnet Mask** – The subnet mask for the IP address to separate the network portion from the host portion of the address (typically 255.255.255.0) • **Management Gateway** – The default gateway of the network. • **Primary DNS** – The primary DNS server used by the network. • **Secondary DNS** – The secondary DNS server used by the network.	
Hardware information	• **MAC Address** – MAC address of the Summit WM Controller's management port • **Serial #** – The Summit WM Controller's serial #.	
License Key (File)	An *.xml* file that is provided along with the product. This file must be applied to the product to enable all the functionalities.	

Table 6: Information gathering table (Continued)

Configuration data	Description	Your entry
Data Ports information	• **IP address** – IP address of the physical ethernet port. • **Subnet mask** – Subnet mask for the IP address, which separates the network portion from the host portion of the address (typically 255.255.255.0). • **MTU** – The maximum transmission unit or maximum packet size for this port. The default setting is 1500. If you change this setting, and are using OSPF, you must make sure that the MTU of each port in the OSPF link matches. • **Function** – The port's function. > **Host Port** – A port for connecting Wireless APs with no dynamic routing. > **Third-party AP Port** – A port to which the third-party AP is connected. > **Router Port** – A port that connects to an upstream, next-hop router in the network. • **VLAN ID** – The ID of the VLAN to which the AP is connected.	
Static Routing	**Static IP address** – The static IP address that is assigned to the Summit WM Controller when it is configured for static routing.	
OSPF Routing	• **Router ID** – The router ID is its own IP address. • **Area ID of OSPF** – Id of OSPF's area. 0.0.0.0. is the main area in OSPF. • **OSPF Authentication Password** – If you select Authentication type as Password, then you will need a password.	
DHCP Service	• **IP address range** – This is the range from which the IP address will be distributed across the network. > **Start IP address** – This is the start IP address of the range. > **End IP address** – This is the end IP address of the range. • **Lease duration** – The DHCP server assigns a client an IP address for a given amount of time. The amount of time for which the IP address can be given is called lease duration. > **Days** – The number of days for which the lease can be given. > **Hours** – The number of hours for which the lease can be given. > **Minutes** – The number of minutes for which the lease can be given.	
IP Address for installing DHCP service	**IP Address** – If you are using WM-AD, you will need the WM-AD' IP address. If you are not using WM-AD, you will need the Summit WM Controller's IP address.	
WM-AD gateway for installing DHCP service	**WM-AD gateway** – If you are using WM-AD, you will need the WM-AD gateway.	

Table 6: Information gathering table (Continued)

Configuration data	Description	Your entry
Domain name for installing DHCP service	**Domain name** – Your organization's domain name.	
Windows 2003 Server's IP address	**IP address** – The IP address of Windows 2003 Server.	
SLP DA's IP address	**Hexa values of SLP DA's IP address** – The Wireless APs use the SLP DA to discover the Summit WM Controller. The mobility agents use the SLP DA to discover the mobility manager. The dotted decimal values of the SLP DA's IP address.	
Internet Protocol configuration for DNS Service in Windows 2003 server	• **Static IP address** – Windows 2003 server's static IP address. • **Subnet Mask** – Subnet mask of Windows 2003 server's static IP address. • **Gateway** – Windows 2003 server's gateway. • **ISP's IP address** – Your ISP's (Internet Service Provider) IP address. • **IP address** – Summit WM Controller's IP address.	
Port information for installing IAS in Windows 2003 server	• **Authentication Port** – Summit WM Controller's port # used to access the IAS service. • **Accounting Port** – Type the Summit WM Controller's port # that is used to access the accounting service. The values you record here should match what you define in the Port text box of Auth section in the Acc & Acct tab of Summit WM Controller's WM-AD screen.	
Wireless AP's properties	• **Summit WM Controller's Port #** – Summit WM Controller's ethernet port to which the Wireless AP is connected. • **Country** – The country where the Wireless AP operates. • **Serial #** – A unique identifier that is assigned during the manufacturing process of the Wireless APs. • **Hardware version** – The current version of the Wireless AP hardware. • **Application version** – The current version of the Wireless AP software. • **VLAN ID** – The ID of the VLAN on which the Wireless AP operates.	
Local DHCP Server In Routed WM-AD	• **Gateway** – The Summit WM Controller advertises this address to the wireless devices when they sign on and get a dynamic IP address. The gateway corresponds to the IP address that is communicated to mobile users. • **Subnet mask** – Subnet mask for the gateway IP address to separate the network portion from the host portion of the address (typically 255.255.255.0). • **Address range** – The range from which the IP addresses are provided to the wireless devices that use the WM-AD. • **External enterprise domain name** – The external enterprise domain name. • **DNS Server IP address** – The IP address of the domain name server on the enterprise network.	

Table 6: Information gathering table (Continued)

Configuration data	Description	Your entry
DHCP Relay in Routed WM-AD	• **Gateway** – The Summit WM Controller advertises this address to the wireless devices when they sign on and get a dynamic IP address. The gateway corresponds to the IP address that is communicated to mobile users. • **Subnet mask** – Subnet mask for the gateway IP address to separate the network portion from the host portion of the address (typically 255.255.255.0). • **DHCP Server IP address(es)** – IP addresses of the external DHCP servers on the enterprise network.	
Next Hop Routing for Routed WM-AD	• **Next hop IP address** – The next-hop IP identifies the target device to which all WM-AD (user traffic) will be forwarded to. Next-hop definition supersedes any other possible definition in the routing table. • **OSPF routing cost** – The OSPF cost value provides a relative cost indication to allow upstream routers to calculate whether or not to use the Summit WM Controller as a better fit, or lowest cost path to reach the devices in a particular network. The higher the cost, the less likely that the Summit WM Controller will be chosen as a route for traffic, unless that Summit WM Controller is the only possible route for that traffic	
VLAN Information for Bridge Traffic Locally at WM WM-AD	• **VLAN ID** – The ID # of VLAN that is mapped to a Summit WM Controller interface. • **Interface** – The name of the interface to which the VLAN is mapped. • **Interface IP address** – The interface's IP address. • **Mask** – The subnet mask of the WM-AD.	
VLAN ID for Bridge traffic locally at AP WM-AD	• **VLAN ID** – The ID #of VLAN that is mapped to a Summit WM Controller interface.	
Authentication and Accounting information for captive portal configuration	• **Port** – Used to access the RADIUS server. The default is 1812. • **# of Retries** – The number of times the Summit WM Controller will attempt to access the RADIUS server. • **Timeout** – The maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt. • **NAS Identifier** – A RADIUS attribute that identifies the server responsible for passing information to the designated servers and then acting on the response returned. This is optional.	

Table 6: Information gathering table (Continued)

Configuration data	Description	Your entry
Internal captive portal settings information	• **Login Label** – The text that will appear as a label for the user name. • **Password Label** – The text that will appear as a label for the user password text box. • **Header URL** – The URL of the file to be displayed in the header of the Captive Portal screen. • **Footer URL** – The URL of the file to be displayed in the footer of the Captive Portal screen. • **Message** – The message that you type in this text box will be displayed above the Login text box to greet the user. You can type a message, explaining why the Captive Portal screen is used and the instructions for the user. • **Replace Gateway IP with FQDN** – If you are using FQDN (Fully Qualified Domain Name) as the gateway address, document the FQDN. • **Default Redirection URL** – The URL to which the wireless devices will be directed after authentication.	
Shared Secret Password for external captive portal configuration	**Password** – This password encrypts the information exchanged between the Summit WM Controller and the external Captive Portal server.	
MAC-based authentication information	• **Port** – The port used to access the RADIUS server. The default is 1812. • **# of Retries** – Number of times the Summit WM Controller will attempt to access the RADIUS server. • **Timeout** – The maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt. • **NAS IP Address** – IP address of the network access server (NAS).	
Exception filter rules information	**IP/subnet** – The destination IP address. You can also specify the IP range, a port designation or a port range on the IP address here.	
Static WEP privacy information	• **WEP Key Length** – Size of a WEP key. • **Strings** – This is the secret WEP key string.	
WPA-PSK privacy information	• **Broadcast re-key interval** – The time interval (in seconds) after which you want the broadcast encryption key to be changed automatically. The default is 3600. • **Pre-shared Key** – The shared secret key that is to be used between the wireless device and the Wireless AP. The shared secret key is used to generate the 256 bit key.	
Dynamic WEP privacy information	**Broadcast re-key interval** – The time interval (in seconds) after which you want the broadcast encryption key to be changed automatically. The default is 3600.	
Availability information	• **Primary Summit WM Controller's IP address** • **Secondary Summit WM Controller's IP address** • **IP address of primary Summit WM Controller's physical port** • **IP address of secondary Summit WM Controller's physical port**	

Table 6: Information gathering table (Continued)

Configuration data	Description	Your entry
Mobility manager information	• **Port** – The interface of the Summit WM Controller that is to be used as the mobility manager. Ensure that the selected interface is routable on the network. • **Heartbeat** – The time interval (in seconds) at which the mobility manager sends a heartbeat message to the agent. The default is 5.	
Mobility agent information	• **Port** – The interface of the Summit WM Controller that is to be used as the mobility agent. Ensure that the selected interface is routable on the network. • **Heartbeat** – The time interval (in seconds) for which the mobility agent should wait for the connection establishment response before trying again. The default is 60. • **Discovery Method** – The method by which the mobility agent will discover the mobility manager. You have the following two options: > S**LPD (Service Location Protocol Daemon)** – Enables the discovery of mobility manager Summit WM Controller, using SLP. The mobility manager's address must be configured on the network using SLP when selecting this option. > **Static Configuration** – Allows the mobility agent to discover the mobility manager without the SLP support. If you select Static Configuration, you will need the IP address of the Summit WM Controller that will serve as the mobility manager.	

2 Summit WM Controller configuration

This chapter explains how to configure the Summit WM Controller's settings to make it operational.

The topics in this chapter are organized as follows:

- Accessing the Summit WM Controller for the first time
- Connecting the Summit WM Controller to the enterprise network
- Changing the administrator password
- Configuring the network time
- Applying a license key

Accessing the Summit WM Controller for the first time

You can access the Summit WM Controller by using a laptop computer with a Web browser.

To access the Summit WM Controller using a web-enabled laptop:

1 Connect the Summit WM Controller's management port to the web-enabled laptop computer with a cross-over RJ 45 Ethernet cable.

NOTE

The IP address of the Summit WM Controller's management port is 192.168.10.1.

2 Statically assign an unused IP address in the 192.168.10.0/24 subnet for the Ethernet port of the laptop computer.

You can use any IP address from 192.168.10.2 to 192.168.10.254.

3 Launch your web browser.

4 In the address bar, type `https://192.168.10.1:5825`. The **Summit WM GUI** login screen is displayed.

Extreme Networks Summit™ WM-Series Console
Summit™ WM-Series Home
Extreme Networks - Summit WM-Series WLAN Controller Software
Please Login to access pages of Summit WM-Series WLAN Controller Software.
If you do not have the login information, please contact your administrator.
User Name:
Password:
Login

5 In the **User Name** text box, type `admin`.

6 In the **Password** text box, type `abc123`.

7 Click **Login**. The **Summit WM GUI** is displayed.

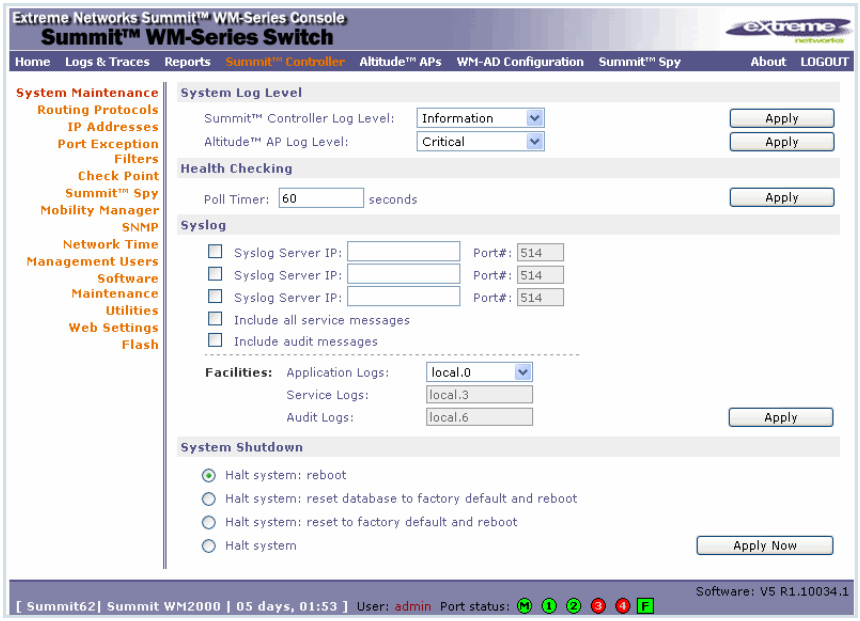
NOTE

In the footer of the Summit WM GUI, the following is displayed:

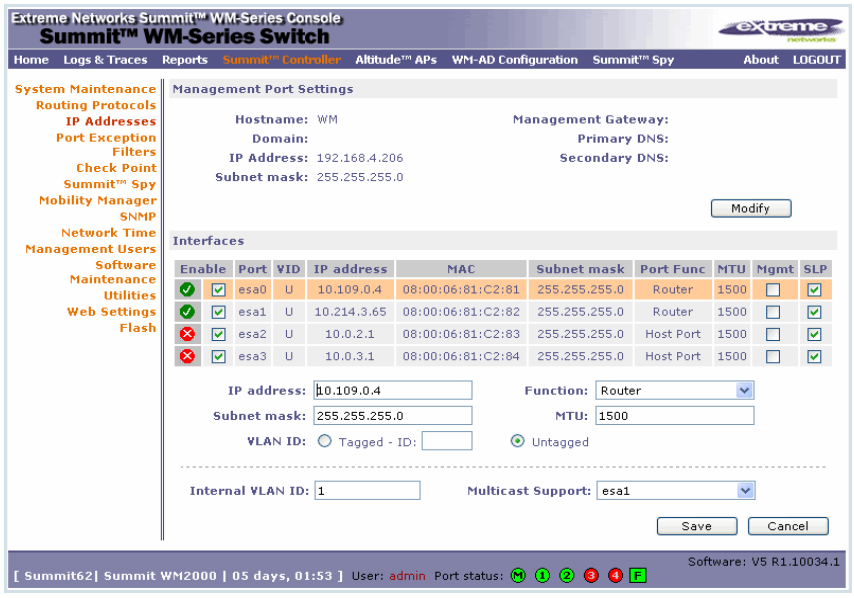
- ***[host name | product name | up time]***
- *For example, [WM200/2000 | WM200/2000 | 01 days, 19:54]. If there is no key (unlicensed),* ***UNLICENSED*** *is displayed besides the software version.*

- ***User*** *is the user id you used to login in. For example, admin.*
- ***Port Status*** *is the connectivity state of the port.* ***M*** *is for the Management interface, which is on eth0 and the numbered lights reflect the esa ports on the system. Green indicates the interface is active and running. Red indicates the interface is down. In the Summit WM100 Controller, the footer of the Wireless Manager does not include the link status of the physical interfaces.*

8 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.



9 In the left pane, click **IP Addresses**. The factory default settings for the Summit WM Controller are displayed.

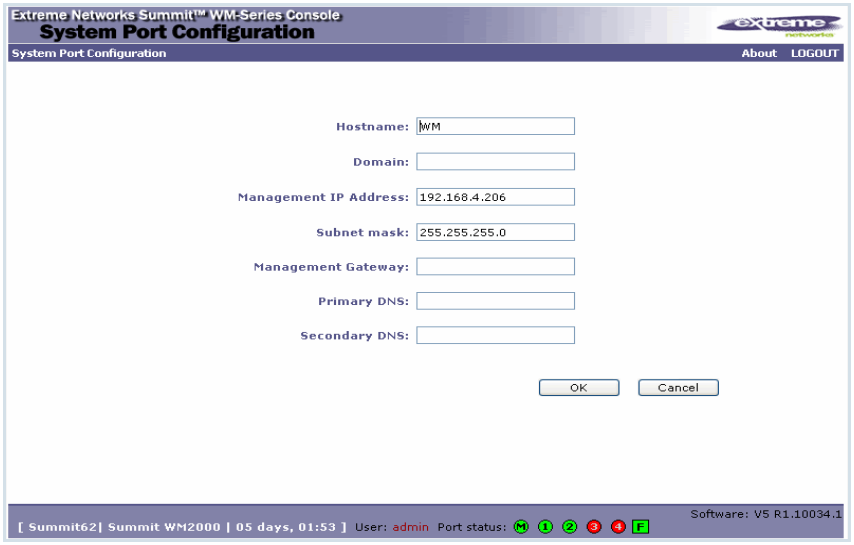


NOTE

Only the following models support VLAN:
- *Summit WM2000 Controller*

- *Summit WM200 Controller*
- *Summit WM20 Controller*

10 In the **Management Port Settings** section, click **Modify**. The **System Port Configuration** screen is displayed.



11 Type the following information:

- **Hostname** – Specifies the name of the Summit WM Controller by which it will be known. You must assign a unique name for the Summit WM Controller.
- **Domain** – Specifies the IP domain name of the enterprise network.
- **Management IP address** – Specifies the new IP address for the Summit WM Controller's management port. Change the value in this text box to the IP address assigned to the Summit WM Controller's management port by your network administrator.
- **Subnet Mask** – Specifies the subnet mask for the Summit WM Controller's management port. Change the value in this text box to the value provided by your network administrator.
- **Management Gateway** – Specifies the default gateway of the network as provided by the network administrator.
- **Primary DNS** – Specifies the primary DNS server used by the network as provided by your network administrator as provided by your network administrator. This field is optional.
- **Secondary DNS** – Specifies the secondary DNS server used by the network as provided by your network administrator. This field is optional.

12 Click **OK**.

NOTE

The Web connection between the computer and the Summit WM Controller is lost. The IP addresses are now set to the network you defined.

Now you should connect the Summit WM Controller to the enterprise network. The following section explains how to connect the Summit WM Controller to the enterprise network.

Connecting the Summit WM Controller to the enterprise network

To connect the Summit WM Controller to the enterprise network:

1. Disconnect your laptop computer from the Summit WM Controller management port.
2. Connect the Summit WM Controller management port to the enterprise Ethernet LAN. The Summit WM Controller resets automatically.
3. Log on to the Summit WM GUI from any computer on the enterprise network. Type the following URL in a browser to access the Summit WM GUI: `https://<IP Address>:5825`

Before you proceed further, you should change the default administrator password. The following section explains how to change the default administrator password.

Changing the administrator password

To change the administrator password:

1. Login on the Summit WM Controller using the default administrator password.
2. From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.
3. In the left, click **Management Users.**
4. In the user_admin table, click **admin**.
5. In the **Modify User Password** text box, type the new administrator password.
6. In the **Modify User Confirm Password** text-box, retype the new administrator password.
7. Click **Change Password**.

NOTE

Although the default password i.e., abc123, is of six characters in length, the new password must be of eight characters in length. For more information, see the Summit WM User Guide.

Configuring the network time

The internal clocks of the Summit WM Controller and Wireless APs on a network may differ. You should synchronize the clocks of the Summit WM Controller and the Wireless APs to ensure that the logs bear correct time stamps on them. For more information on reports and logs, see **Chapter 10 Working with reports and displays** of *Summit WM User Guide.*

NOTE

The normal operation of the Summit WM Controller will not be affected if you do not synchronize the clock. The clock synchronization is necessary to ensure that the logs bear the correct time stamps on them.

The Summit WM Controller provides you the following two options to synchronize the clocks of Summit WM Controller and the Wireless APs:

- Using the system's time – The system's time is the Summit WM Controller's time.
- Using the network time protocol (NTP) – The Network Time Protocol is a protocol for synchronizing the clocks of computer systems over packet-switched data networks.

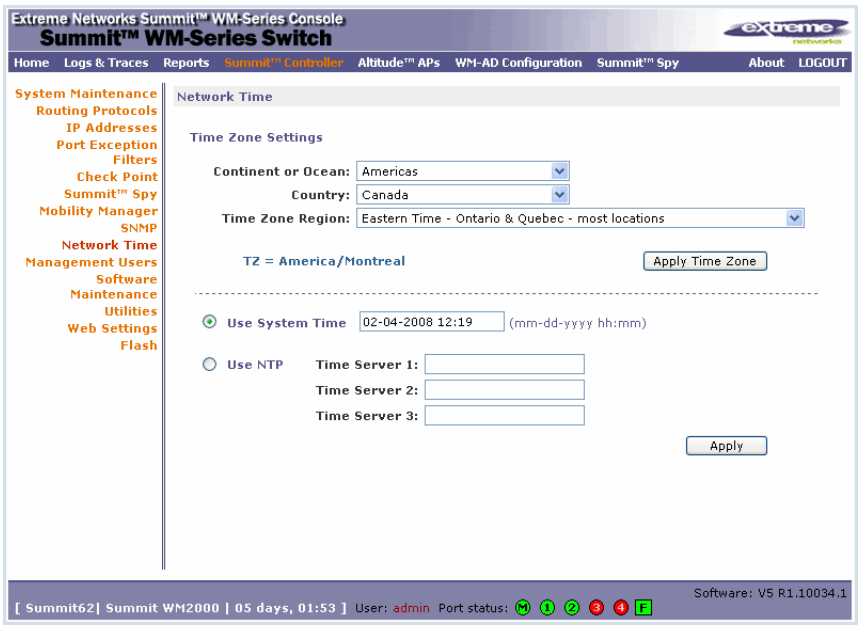
Configuring the network time using the system's time

To configure the network time, using the system's time:

1 Login on the Summit WM Controller. The Summit WM GUI screen is displayed.

2 Click **Summit Controller**. The **Summit Controller** screen is displayed.

3 In the left pane, click **Network Time**. The **Network Time** screen is displayed.



4 From the **Continent or Ocean** drop-down list, click the appropriate large-scale geographic grouping for the time zone.

5 From the **Country** drop-down list, click the appropriate country for the time zone. The contents of the drop-down list change, based on the selection in the **Continent or Ocean** drop-down list.

6 From the **Time Zone Region** drop-down list, click the appropriate time zone region for the selected country.

7 Click **Apply Time Zone**.

8 Select the **Use System Time** radio button.

You can modify the system's date and time by changing the entries in the **Use System Time** text box. The date is in **mm-dd-yyyy** format and the time is in **hh:mm** format.

9 Click **Apply**.

10 Reboot the Summit WM Controller. The WLAN network time is synchronized in accordance with the Summit WM Controller's time.

Configuring the network time using the NTP

To configure the network time using the NTP:

1 Perform Step 1 to Step 7 of "Configuring the network time using the system's time" on page 40.

2 Select **Use NTP** radio button.

3 In the **Time Server 1** text box, type the IP address or FQDN (Full Qualified Domain Name) of a NTP Time Server that is accessible on the enterprise network.

4 Repeat Step 3 for **Time Server2** and **Time Server3** text boxes.

If the system is not able to connect to the **Time Server 1**, it will attempt to connect to the additional servers that have been specified in **Time Server 2** and **Time Server 3** text boxes.

5 Click **Apply**.

6 Reboot the Summit WM Controller. The WLAN network time is synchronized in accordance with the specified time server.

Now you should apply a license key to the Summit WM Controller in order to enable its all the functionalities.

Applying a license key

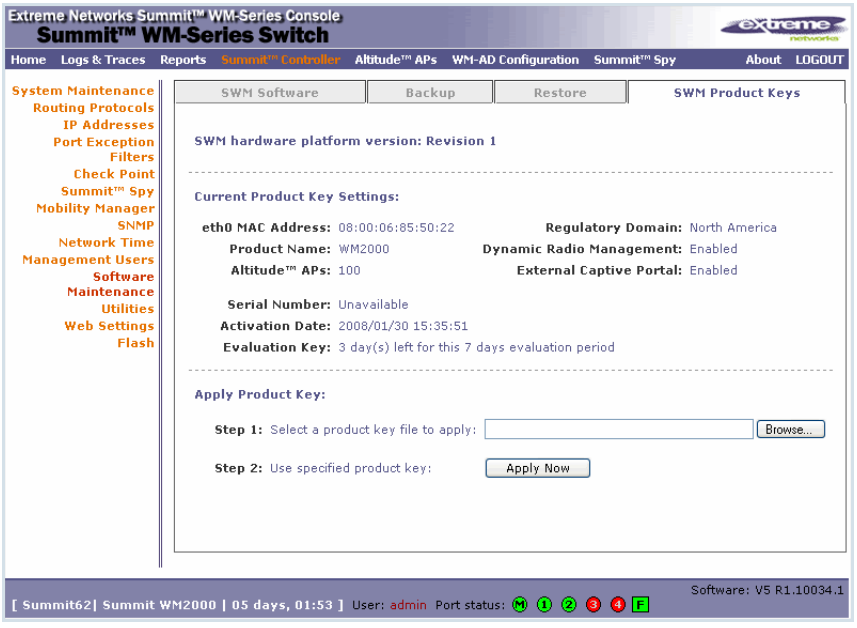
To apply the license:

1 Login on the Summit WM Controller.

2 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

3 In the left pane, click **Software Maintenance**.

4 Click the **SWM Product Keys** tab.



5 In the **Apply Product Key** section, click **Browse** to navigate to the location of the software license file, and select the file.

6 Click **Apply Now**. The software license key is applied, and the Summit WM Controller reboots.

Now you should configure the Summit WM Controller's physical ports. The following chapter describes how to configure the Summit WM Controller's physical ports.

3 Physical ports configuration

This chapter describes how to configure the Summit WM Controller's physical ports.

The topics in this chapter are organized as follows:

- Physical data ports overview
- Configuring physical data ports

Physical data ports overview

Port configuration defines the administrative state of each interface. By default, the data interface states are disabled. You must enable each of the data interfaces individually. A disabled interface does not allow data to flow (receive/transmit).

You can define the data ports to function as one of the following three types:

- **Host Port** – You must use a Host Port definition to connect the Access Points with dynamic routing disabled. The dynamic routing is disabled to ensure that the port does not participate in dynamic routing operations to advertise the availability of WM Access Domain Services (WM-AD) hosted by the WM. Host ports may still be used as the target for static route definitions.
- **Third-party AP Port** – You must use a Third-party AP Port definition for a port to which you will be connecting the third-party APs. The third-party APs must be deployed within a segregated network for which the Summit WM Controller becomes the single point of access to the network. When you define a port as the third-party AP port, the interface segregates the third-party AP from the remaining network. Only one port can be configured for the third-party APs.
- **Router Port** – You must use a Router Port definition for a port that you will be connecting to an upstream, next-hop router in the network. When you define a port as the router port, the system knows that the particular interface is eligible to participate in dynamic routing protocol exchanges. The Summit WM Controller supports OSPF as the dynamic routing protocol.

The Summit WM Controller is shipped from the factory with all of its data ports set-up as host ports. You must set-up or configure how each port should function.

If the interface is directly attached to an existing VLAN trunking port, you must specify which VLAN the port belongs to by tagging the **VLAN ID** to the port. When you tag the VLAN ID to the port, all packets associated with the port would be tagged with the corresponding VLAN. This enables the Summit WM Controller to directly connect to a VLAN network without the need to remove VLAN tags at the connection port.

NOTE

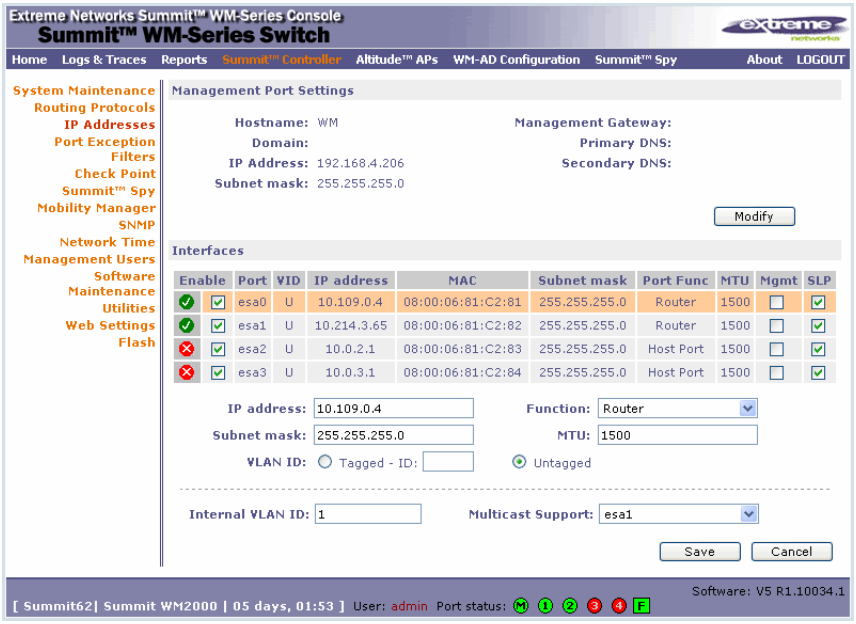
Only the following models support VLAN:
- *Summit WM2000 Controller*
- *Summit WM2000 Controller*
- *Summit WM20 Controller*

Configuring physical data ports

To configure the data port interfaces on the Summit WM Controller:

1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 In the left pane, click **IP Addresses**. The **Management Port Settings** screen is displayed.



The lower part of the screen displays the four ethernet ports, and each MAC address is displayed under the MAC column.

NOTE

The number of ports displayed on the Management Port Settings screen (on the GUI) reflects the number of physical ports the Summit WM Controller has. For example, Summit WM100/200/2000 Controllers have four data ports, and hence the Management Port Settings screen will display four ports. The Summit WM1000 Controller has two data ports. Therefore the Management Port Settings screen will display two ports.

The lowest part of the screen displays the text boxes for IP address, MAC address, Subnet mask and MTU. You can edit these values.

3 To enable the port, select the checkbox under the **Enable** column.

NOTE

You must disable all the interfaces that are not in use in order to avoid routing loops.

4 Type the following:

- **IP address** – The IP address of the physical ethernet port.
- **Subnet mask** – The subnet mask for the IP address, which separates the network portion from the host portion of the address (typically 255.255.255.0)
- **MTU** – The maximum transmission unit or maximum packet size for this port. The default setting is 1500. If you change this setting, and are using OSPF, you must make sure that the MTU of each port in the OSPF link matches.

NOTE

The Summit WM Controller and Wireless AP are capable of participating in MTU discovery. During the MTU discovery process, the Summit WM Controller and Wireless AP automatically learn the correct MTU, and then correct their settings accordingly. If the routed connection to an Wireless AP travels a link that imposes a lower MTU than the configured MTU, the Summit WM Controller and Wireless AP will correct their MTU settings

5 From the **Function** drop-down list, click one of the three functions.

- **Host Port** – Specifies a port for connecting Wireless APs with no dynamic routing.
- **Third-party AP Port** – Specifies a port to which the third-party AP is connected.
- **Router Port** – Specifies a port that connects to an upstream, next-hop router in the network.

6 To enable management traffic on the port, select the **Mgmt** checkbox.

Enabling management provides access to the Summit WM Controller through the selected port using SNMP ("get" only), SSH and HTTPS management services.

7 To enable the SLP protocol, select the **SLP** checkbox.

Selecting the **SLP** checkbox will enable the Summit WM Controller to advertise this port to the network for Wireless APs' discovery.

8 Select either of the two VLAN options:

- **Untagged**: Select **Untagged,** if you are not using VLAN.
- **Tagged**: Select **Tagged**, and specify the VLAN ID in the **VLANID** text box, if you are using VLAN.

NOTE

The VLAN text boxes on the Management Port Settings screen are displayed only if you are using one of the following models:
• Summit WM2000 Controller
• Summit WM200 Controller
• Summit WM20 Controller

9 To allow multicast support, click **Enabled** from the drop-down list.

When you enable the multicast support, the interface is used for relaying multicast traffic between core and wireless devices. You must define only one port for the multicast traffic.

10 To save your changes, click **Save**.

11 Repeat Step 3 to Step 10 for every port that is to be enabled.

Now you should configure the routing on the Summit WM Controller. The following chapter describes how to configure the Summit WM Controller's physical ports.

4 Routing Configuration

This chapter explains how to configure static routing and OSPF routing on the Summit WM Controller.

The topics in this chapter are organized as follows:

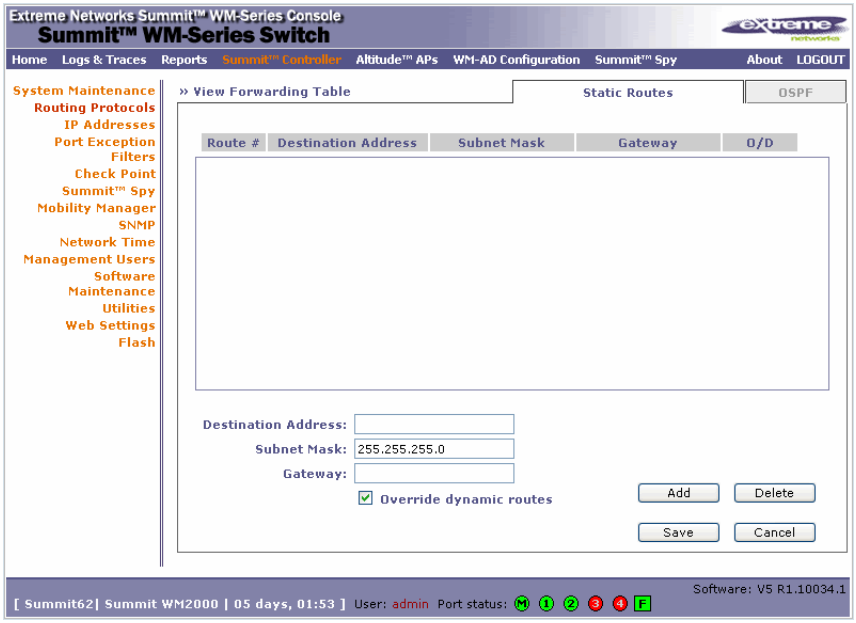
- Configuring a static route
- Configuring the OSPF routing

Configuring a static route

To configure a static route:

1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 In the left pane, click **Routing Protocols**. The **Routing Protocols** screen is displayed.



3 To add a new route, type the destination IP address of a packet in the **Destination Address** text box.

To define a default static route for any unknown address not in the routing table, type `0.0.0.0`. This is also called as defining the default gateway.

4 Type the appropriate subnet mask in the **Subnet Mask** text box to separate the network portion from the host portion of the IP address (typically 255.255.255.0).

To define a default static route for any unknown address, type `0.0.0.0`.

5 Type the IP address of the specific router port or gateway that serves as the next-hop for the packets from Summit WM Controller gateway).

This router port (or gateway) must be on the same subnet as the Summit WM Controller.

6 Click **Add**. The new route is added to the list of routes.

7 Select the **Override dynamic routes** check box to give priority over the OSPF routes that the Summit WM Controller uses for routing.

By default, the **Override dynamic routes** is enabled. If you want to remove priority for static routes so that the routing is always controlled dynamically, clear the **Override dynamic routes** check box.

8 To save your changes, click **Save**.

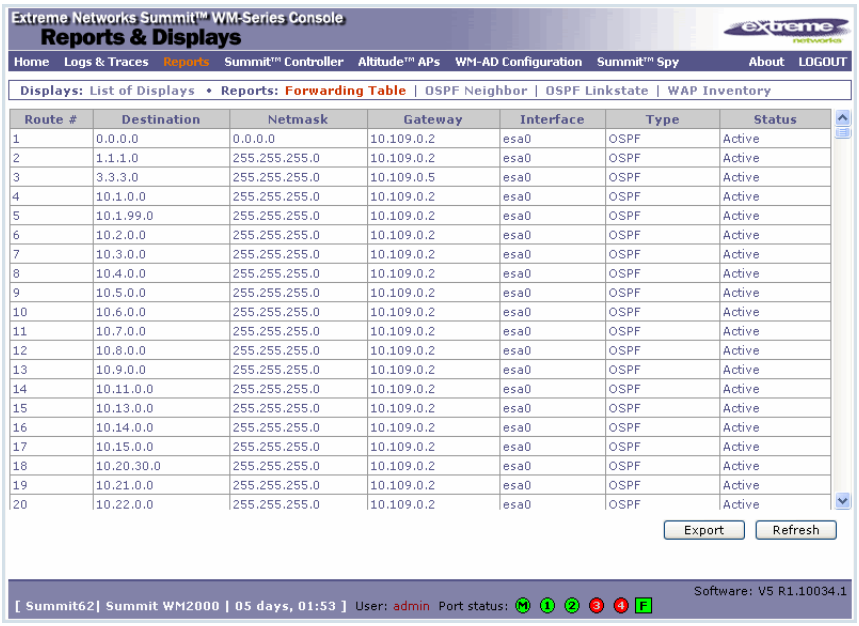
Viewing the forwarding table

You can view the defined routes, whether static or OSPF, and their current status in the forwarding table.

To view the forwarding table:

1 From the main menu, click **Reports**. The **Reports & Displays** screen is displayed.

2 Click **Forwarding Table**. The **Forwarding Table** is displayed.


Extreme Networks Summit™ WM-Series Console
Reports & Displays
Home Logs & Traces Reports Summit™ Controller Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Displays: List of Displays • Reports: Forwarding Table | OSPF Neighbor | OSPF Linkstate | WAP Inventory
Route # Destination Netmask Gateway Interface Type Status
1 0.0.0.0 0.0.0.0 10.109.0.2 esa0 OSPF Active
2 1.1.1.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
3 3.3.3.0 255.255.255.0 10.109.0.5 esa0 OSPF Active
4 10.1.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
5 10.1.99.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
6 10.2.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
7 10.3.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
8 10.4.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
9 10.5.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
10 10.6.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
11 10.7.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
12 10.8.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
13 10.9.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
14 10.11.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
15 10.13.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
16 10.14.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
17 10.15.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
18 10.20.30.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
19 10.21.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
20 10.22.0.0 255.255.255.0 10.109.0.2 esa0 OSPF Active
Export Refresh
Software: V5 R1.10034.1
[Summit62| Summit WM2000 | 05 days, 01:53] User: admin Port status: M 1 2 3 4 F

3 To update the display, click **Refresh**.

Configuring the OSPF routing

To configure the OSPF routing, you must:

- Define one data port as a router port on the **IP addresses** screen.
- Enable OSPF globally on the Summit WM Controller. For more information, see "Enabling OSPF globally on the Summit WM Controller" on page 49.

- Define the global OSPF parameters. For more information, see "Defining the global OSPF parameters" on page 50.

  Ensure that the OSPF parameters defined for the Summit WM Controller are consistent with the adjacent routers in the OSPF area. The consistency includes the following:

  - **Timer Settings** – If the peer router has different timer settings, the protocol timer settings in the Summit WM Controller must be changed to the peer router to match in order to achieve OSPF adjacency.
  - **MTU** – The MTU of the ports on either sides of the OSPF link must match. You must remember here that the MTU for ports is set to 1500 on the Summit WM Controller is when configuring the physical data ports on IP addresses' screen. The value of 1500 matches the MTU in standard routers.

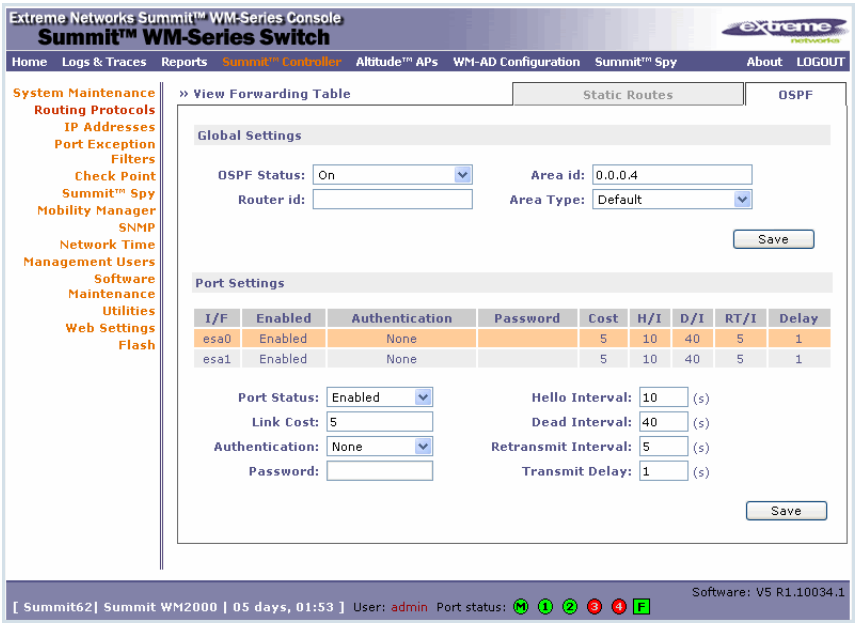
Enabling OSPF globally on the Summit WM Controller

To enable the OSPF globally on the Summit WM Controller:

1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 In the left pane, click **Routing Protocols**. The **Routing Protocols** screen is displayed.

3 Click the **OSPF** tab.



4 From the **OSPF Status** drop-down list, click **ON** to enable OSPF.

5 In the **Router ID** text box, type the IP address of the Summit WM Controller.

  The router ID must be unique across the OSPF area.

  If the **Router ID** text box is left blank, the IP address of one of the Summit WM Controller's will be picked as the router ID.

6 In the **Area ID** text box, type the area.

  The main area in OSPF depends upon your network configuration. You must find out the main area from your network administrator.

7 In the **Area Type** drop-down list, click one of the following:

- **Default** – Acts as the backbone area (also known as area zero). It forms the core of an OSPF network. All other areas are connected to it, and inter-area routing occurs via a router connected to the backbone area.
- **Stub** – Does not receive external routes. External routes are defined as routes, which are distributed in OSPF via another routing protocol. Therefore, the Stub area relies on a default route to send traffic routes outside the present domain.
- **Not-so-stubby** – A type of stub area that can import autonomous system (AS) external routes and send them to the default/backbone area, but can not receive AS external routes from the backbone or other areas.

8 To save your changes, click **Save**.

Defining the global OSPF parameters

To define the global OSPF parameters:

1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 In the left pane, click **Routing Protocols**. The **Routing Protocols** screen is displayed.

3 Click the **OSPF** tab.

4 From the **Port Status** drop-down list, click **Enabled**. The OSPF is enabled on the port.

NOTE

Only the interfaces defined as router type are available for OSPF neighborhood establishment.

5 In the **Link Cost** text box, type the OSPF standard for your network for this port.

The **Link Cost** is the cost of sending a data packet on the interface. The lower the cost, the more likely the interface will be used to forward the data traffic.

NOTE

If more than one port is enabled for OSPF, you must prevent the Summit WM Controller from serving as a router for the other traffic. In order to do this, you must set the Link Cost to its maximum value of 65535.

6 From the **Authentication** drop-down list, click the authentication type of OSPF on your network:

- **None**: The default is **None**. If **None** is selected, leave the **Password** text box blank.
- **Password**: If **Password** is selected, type the password in the **Password** text box in the.

7 Type the values in the following text boxes.

- **Hello-Interval** – Specifies the time in seconds (displays OSPF default). The default setting is 10.
- **Dead-Interval** – Specifies the time in seconds (displays OSPF default). The default setting is 40.
- **Retransmit-Interval** – Specifies the time in seconds (displays OSPF default). The default setting is 5.
- **Transmit Delay** – Specifies the time in seconds (displays OSPF default). The default setting is 1.

8 To save your changes, click **Save**.

Now you must confirm that the ports are set for OSPF.

Confirming the ports are set for OSPF

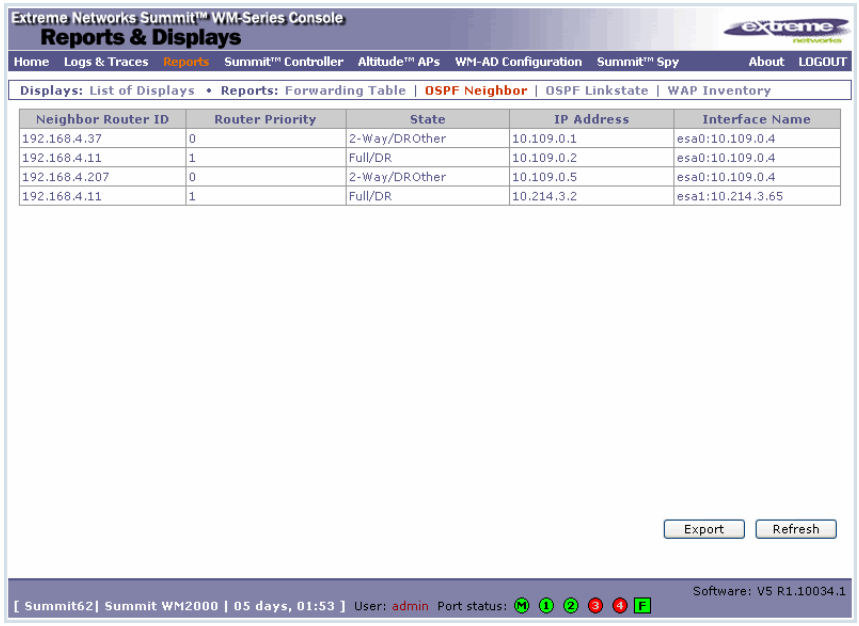
To confirm the ports are set for OSPF:

1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 On the **Routing Protocols** screen, click **View Forwarding Table**. The **Forwarding Table** is displayed.

3 Click the **OSPF Neighbor** tab.

If OSPF protocol is enabled, this report displays the current neighbors for OSPF.


Extreme Networks Summit™ WM-Series Console
Reports & Displays
Home Logs & Traces Reports Summit™ Controller Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Displays: List of Displays • Reports: Forwarding Table | OSPF Neighbor | OSPF Linkstate | WAP Inventory
Neighbor Router ID | Router Priority | State | IP Address | Interface Name
192.168.4.37 | 0 | 2-Way/DROther | 10.109.0.1 | esa0:10.109.0.4
192.168.4.11 | 1 | Full/DR | 10.109.0.2 | esa0:10.109.0.4
192.168.4.207 | 0 | 2-Way/DROther | 10.109.0.5 | esa0:10.109.0.4
192.168.4.11 | 1 | Full/DR | 10.214.3.2 | esa1:10.214.3.65
Export
Refresh
Software: V5 R1.10034.1
[Summit62| Summit WM2000 | 05 days, 01:53] User: admin Port status:

4 Click the **OSPF Linkstate** tab.

If OSPF protocol is enabled, the report displays the link state advertisement (LSAs) received by the running OSPF protocol.

5 To update the screen, click **Refresh**.

Now you should configure the DHCP, DNS and RADIUS servers on the network.

The following chapter explains how to configure DHCP, DNS and IAS services on Windows 2003 Server.

5 Configuring DHCP, DNS and IAS services

This chapter describes how to configure DHCP, DNS and IAS services on Windows 2003 Server. In addition, the chapter explains how to configure DHCP service on a Linux-based server.

Note that your Windows 2003 or Linux server may have a different configuration process than what is described here. You must refer to your manufacturer's document to know the configuration process that is specific to your server.

The configuration processes described in this chapter should be used as examples.

The topics in this chapter are organized as follows:

- DHCP service configuration
- IAS service configuration
- DNS service configuration

DHCP service configuration

Before you can configure the DHCP service, you must install it on the server. DHCP is not installed by default during a typical installation of Windows Standard Server 2003 or Windows Enterprise Server 2003. You can install DHCP either during the initial installation of Windows Server 2003 or after the initial installation is completed.

You may also include **078 SLP DA Option**. The **078 SLP DA Option** is not included by default during a typical installation of DHCP service.

You may visit http://support.microsoft.com to learn how to install DHCP and 078 SLP DA Option on Windows 2003.

The following section describes how to configure DHCP for Summit WM Wireless LAN (WLAN) Solution.

Configuring DHCP in Windows 2003 Server

You must also enable **078 SLP DA Option** for every scope you define. A scope is a collection of IP addresses meant to be distributed by the DHCP server to the client devices on a subnet.

The SLP DA is used by:

- The Wireless APs to discover the Summit WM Controller.
- The mobility agents to discover the mobility manager.

To configure DHCP in Window 2003 Server:

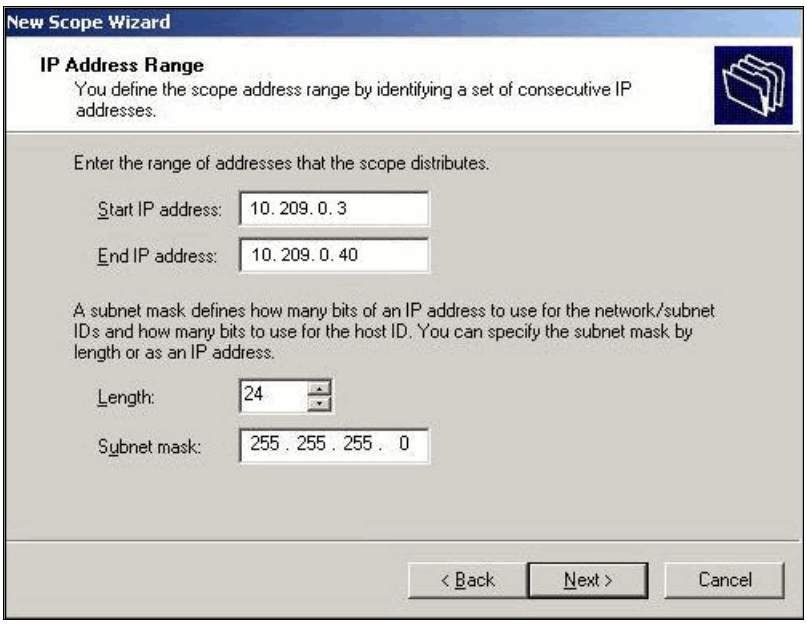
1. Click **Start**, point to **Administrative Tool**, and then click **DHCP**.
2. In the console tree, right-click the DHCP server on which you want to create the new DHCP scope, and then click **New Scope**.

3 Click **Next**. The **Scope Name** window is displayed.

4 In the **Name** and **Description** text boxes, type the scope's name and the description respectively.

This can be any name that you want, but it should be descriptive enough so that you can identify the purpose of the scope on your network.

5 Click **Next**. The **IP Address Range** window is displayed.


New Scope Wizard
IP Address Range
You define the scope address range by identifying a set of consecutive IP addresses.
Enter the range of addresses that the scope distributes.
Start IP address:
10. 209. 0. 3
End IP address:
10. 209. 0. 40
A subnet mask defines how many bits of an IP address to use for the network/subnet IDs and how many bits to use for the host ID. You can specify the subnet mask by length or as an IP address.
Length:
24
Subnet mask:
255 . 255 . 255 . 0
< Back
Next >
Cancel

6 In the **Start IP address** and the **End IP address** text boxes, type the start and end of the IP addresses' range that you want to be distributed to the network.

Range – Is the range of addresses that the scope will distribute across the network. You must use the range provided by your network administrator.

7 In the **Length** text box, type the numeric value of the subnet mask's bits; or in the **Subnet mask** text box, type the subnet mask's IP address.

A subnet mask defines how many bits of an IP address to use for the network/subnet IDs and how many bits to use for the host ID. You can specify the subnet mask by length or as an IP address. You must use the **Length** (or the **Subnet mask**) provided by your network administrator.

8 Click **Next**. The **Add Exclusions** window is displayed.

9 In the **Start IP address** and the **End IP address** text boxes, type the start and end of the IP addresses' range that you want to exclude from the distribution.

You must use the exclusion range provided by your network administrator.

10 Click **Next**. The **Lease Duration** window is displayed.

The DHCP server assigns a client an IP address for a given amount of time. The amount of time for which the IP address can be leased is defined in the **Lease Duration** window.

11 In the **Days**, **Hours and Minutes** text box, type the lease duration.

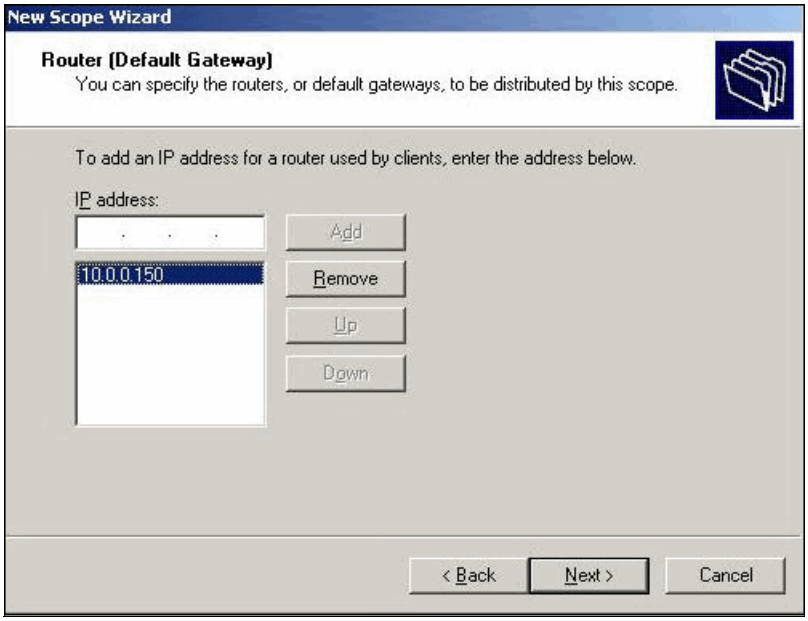
You must use the **Lease Duration** as specified by your network administrator.

12 Click **Next**. The **Configure DHCP Options** window is displayed.

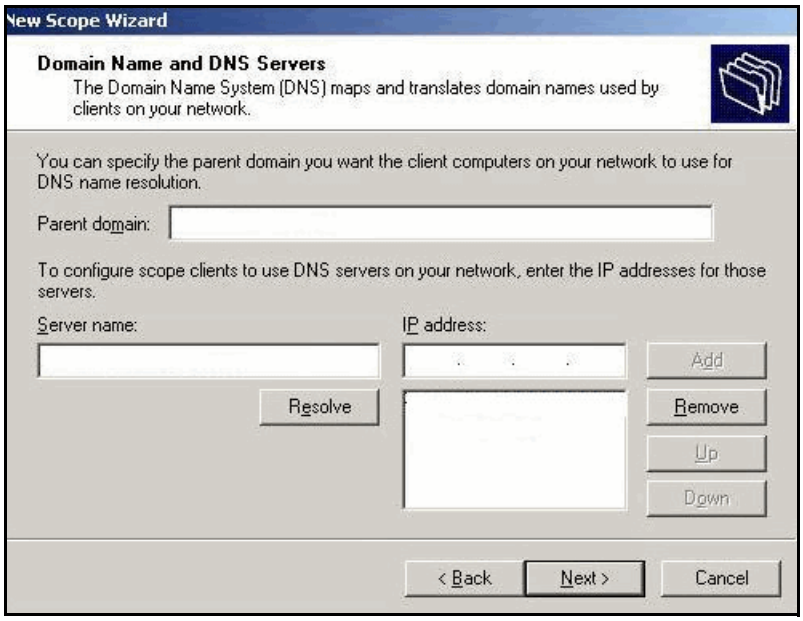
13 Select **Yes, I want to configure these options now**, and then click **Next**. The **Router (Default Gateway)** window is displayed.

14 In the **IP address** text box, type the network's default gateway.

You must use the default gateway provided by your network administrator.



15 Click **Next**. The **Domain Name and DNS Servers** window is displayed.


New Scope Wizard
Domain Name and DNS Servers
The Domain Name System (DNS) maps and translates domain names used by clients on your network.
You can specify the parent domain you want the client computers on your network to use for DNS name resolution.
Parent domain:
To configure scope clients to use DNS servers on your network, enter the IP addresses for those servers.
Server name:
IP address:
Add
Resolve
Remove
Up
Down
< Back
Next >
Cancel

16 In the **Parent domain** text box, type your company's domain name.

You must use the **Parent Domain** provided by your network administrator.

17 In the **Server name** text box, type your server name.

You must use the **Server name** provided by your network administrator.

18 In the **IP address** text box, type your server's IP address, and click **Add**.

19 Click **Next**. The **WINS Servers** window is displayed.

20 Click **Next**. The **Activate Scope** window is displayed.

21 Select **Yes, I want to activate this scope now**, and click **Next**. The wizard displays the following message: **This server is now a DHCP server**.

22 Click **Start**, point to **Administrative Tool**, and then click **DHCP**. The DHCP console tree is displayed.

23 Select the scope you configured, and right-click.

24 Select **Configure Options**. The **Server Options** window is displayed.

25 Enable **078 SLP DA**.

26 In the lower pane of the screen, type the dotted decimal values of the SLP DA's IP address.

NOTE

- *The Wireless APs use the SLP DA to discover the Summit WM Controller.*
- *The mobility agents use the SLP DA to discover the mobility manager.*

NOTE

If there is no SLP deployment on the enterprise network, the Summit WM Controller is configured to act as a DA by default. If you put the Summit WM Controller's IP address(es) in a DHCP server for Option 78, Wireless APs will interact with the Summit WM Controller for discovery.
Similarly, the mobility agents will also interact with the Summit WM Controller to discover the mobility manager.

27 Click **Apply,** and then click **OK**.

Configuring DHCP in Red Hat Linux Server

You can configure a DHCP server using the configuration file `/etc/dhcpd.conf`.

DHCP also uses the file `/var/lib/dhcp/dhcpd.leases` to store the client lease database.

The first step in configuring a DHCP server is to create the configuration file that stores the network information for the clients. Global options can be declared for all clients, or options can be declared for each client system.

The configuration file can contain any extra tabs or blank lines for easier formatting. The keywords are not case-sensitive and lines beginning with a hash mark (#) are considered comments.

To use the recommended mode, add the following line to the top of the configuration file:

ddns-update-style interim;

Read the `dhcpd.conf` man page for details about the different modes.

There are two types of statements in the configuration file:

- Parameters – State how to perform a task, whether to perform a task or what networking configuration options to use to send to the client.
- Declarations – Describe the topology of the network, describe the clients, provide addresses for the clients, or apply a group of parameters to a group of declarations.

Some parameters must start with the option keyword and are referred to as options. Options configure DHCP options; whereas, parameters configure values that are not optional or control how the DHCP server behaves.

Parameters (including options) declared before a section enclosed in curly brackets {} are considered global parameters. Global parameters apply to all the sections below it.

NOTE

If you change the configuration file, the changes will not take effect until you restart the DHCP daemon with the command `service dhcpd restart`.

The following is the example of DHCP configuration on a Red Hat Linux Server.

For Wireless AP subnet

```
subnet 10.209.0.0 netmask 255.255.255.0 {
          option routers 10.209.0.2; ### This is the network's default gateway address.
          option subnet-mask 255.255.255.0
          option domain-name xyznetworks.ca
          option domain-name servers 192.168.1.3, 207.236, 176.11
          range 10.209.0.3 10.209.0.40;
          default-lease-time 7200000 ###The figures are in seconds.
          option slp-directory-agent true 10.209.0.1, 10.209.0.3; ####The Wireless APs
          use the SLP DA to discover the Summit WM Controller, and the mobility agents
          use it to discover the mobility manager.
          authoritative;
          }
```

For WM-AD subnets (In Summit WM Controller it is configured as Use DHCP Relay)

if you are utilizing multiple WM-ADs you must configure the Red Hat Linux server for every WM-AD.

The following is the example of DHCP configuration in Red Hat Linux for two WM-ADs (For more information, see Chapter 7, "WM-AD configuration").

```
subnet 172.29.31.0 netmask 255.255.255.224

        option routers 172.29.31.1; #### This is the WM-AD 1 gateway.
        option subnet-mask 255. 255. 255.0
        option domain-name toronto.xyznetworks.com";
        option domain-name-servers 192.1.1.3;
        range 172.29.31.2 172.29.31.30;
        default-lease-time 36000;
        max-lease-time 7200000;###The figures are in seconds.
        authoritative;

}
```

```
subnet 172.29.2.0 netmask 255.255.255.224

        option routers 172.29.2.1; #### This is the WM-AD 2 gateway.
        option subnet-mask 255. 255. 255.0
        option domain-name toronto.xyznetworks.com";
        option domain-name-servers 192.1.1.3;
        range 172.29.2.2 172.29.2.30;
        default-lease-time 36000;
        max-lease-time 7200000;###The figures are in seconds.
        authoritative;

}
```

IAS service configuration

Microsoft Internet Authentication Service (IAS) can run as a Remote Authentication Dial-in User Service (RADIUS) server. You can use IAS for centralized authentication and accounting of multiple client devices.

IAS configuration involves the following steps:

- Step 1 – Installing IAS on Windows 2003 Server
- Step 2 – Enabling IAS to authenticate users in active directory
- Step 3 – Configuring IAS properties
- Step 4 – Configuring Summit WM Controller as IAS client
- Step 5– Configuring Remote Access Policies

Installing IAS on Windows 2003 Server

You must install IAS on Windows 2003 Server according to the documentation provided with the server. You may also visit http://support.microsoft.com to learn how to install IAS on Windows 2003.

Enabling IAS to authenticate users in active directory

To enable IAS to authenticate users in active directory:

1 Click **Start**, point to **Programs**, point to **Administrative Tools**, and then click **Internet Authentication Service**.

2 In the **Action** menu, click **Register Service in Active Directory**.

3 To confirm the IAS registration in the local domain, click **OK**.

Configuring IAS properties

To configure the IAS properties:

1 Click **Start**, point to **Programs**, point to **Administrative Tools**, and then click **Internet Authentication Service**.

2 Right-click **Internet Authentication Service (Local)**, and then click **Properties**.

3 In the **Description** text box, type a name that you want to assign to this IAS server.

4 If you do not want to record the rejected authentication requests, clear the **Log rejected or discarded authentication requests** checkbox.

NOTE

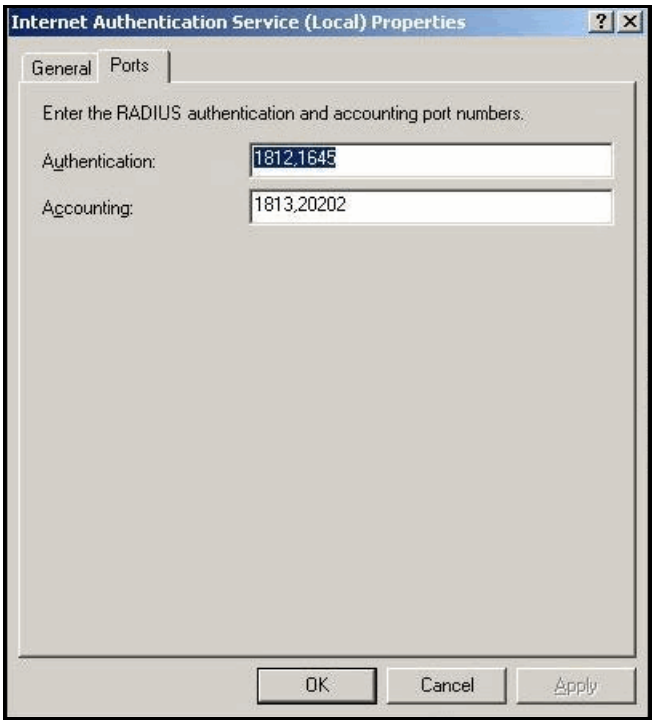
You can use the log file to determine if unauthorized users are attempting to authenticate themselves in the domain.

5 If you do not want to record the successful authentication requests, clear the **Log successful authentication requests** checkbox.

NOTE

You can use the log file to determine the usage patterns of wireless users.

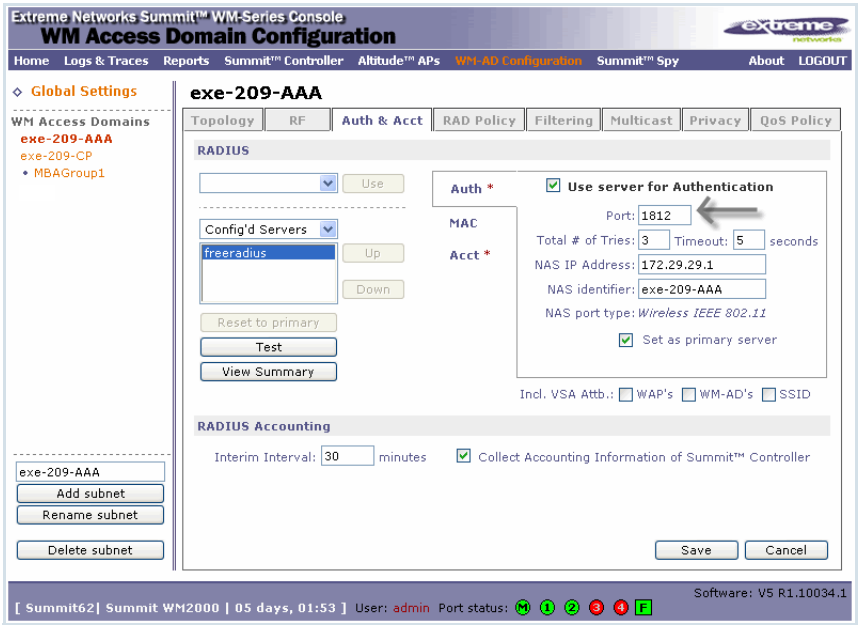
6 Click the **Ports** tab.



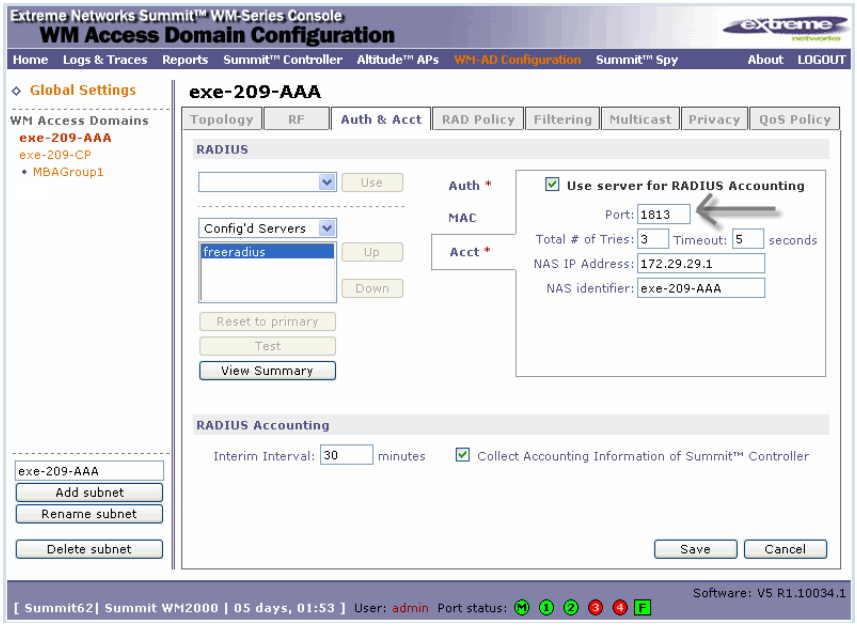
7 In the **Authentication** text box, type the Summit WM Controller's port # that is used to access the authentication (IAS) service.

8 In the **Accounting** text box, type the Summit WM Controller's port # that is used to access the accounting service.

You must note that the values you type in the **Authentication** text box should match the value that you define in the **Port** text box of **Auth** section on the **Auth & Acct** tab of Summit WM Controller's WM-AD screen. For more information, see "Configuring authentication mechanism for WM-AD" on page 97 of Chapter 7, "WM-AD configuration."



Similarly, the values you type in the **Accounting** text box, should match the value that you define in the **Port** text box of **Acct** section in the **Acc & Acct** tab of Summit WM Controller's WM-AD screen.For more information, see "Configuring authentication mechanism for WM-AD" on page 97 of Chapter 7, "WM-AD configuration."



Configuring Summit WM Controller as IAS client

To configure Summit WM Controller as IAS client:

1 Click **Start**, point to **Administrative Tool**, and then click **Internet Authentication Service**.

2 Right-click **Clients**, and then **New Client**.

3 In the **Friendly name** text box, type the name that you want to assign to the Summit WM Controller, and then click **Next**.

4 In the **Client address** (**IP or DNS**) text box, type the IP address of the Summit WM Controller, and then click **Verify**.

5 Click **Resolve**. If the IP address is correct, it appears in the **Search results** text box.

6 Click **Use this IP**.

7 In the **Client-Vendor** list, click **RADIUS Standard**.

8 In the **Shared secret** text box, type a password that both the IAS server and the Summit WM Controller will use to mutually authenticate.

NOTE

This password is case-sensitive. You can use alphanumeric characters. You must configure the same shared secret password for WM-AD Global Settings. For more information, see Section 6.8 WM-AD Global Settings of Summit WM User Guide.

9 Retype the password in the **Confirm shared secret** box, and then click **Finish**.

Configuring Remote Access Policies

To configure Remote Access Policy:

1 Click **Start**, point to **Administrative Tool**, and then click **Internet Authentication Service**.

2 Click **Remote Access Policies**.

3 In the right pane of the **Internet Authentication Service**, click **Allow access if dial-in permission is enabled**, and then right-click **Allow access if dial-in permission is enabled**.

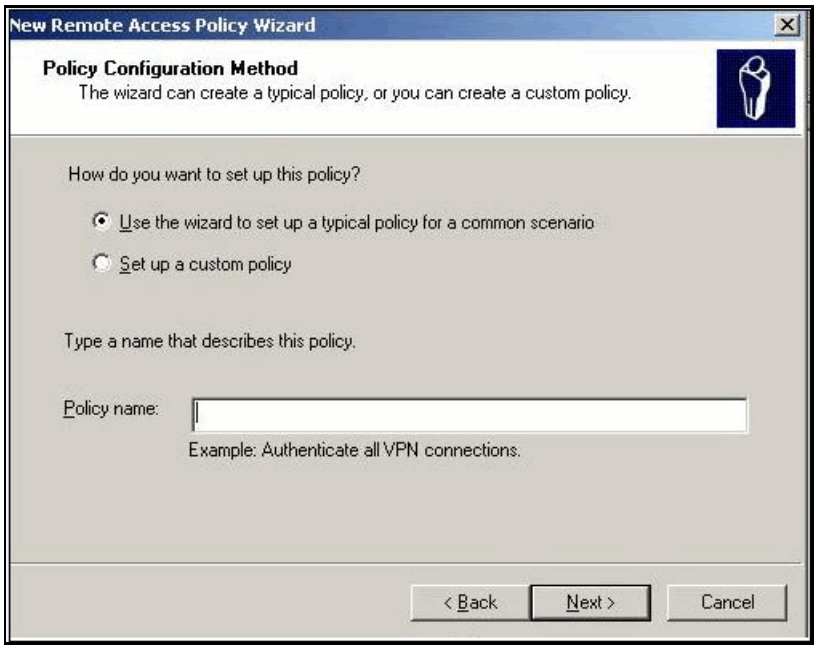
4 Click **Delete**. A dialogue box is displayed.

5 Click **Yes** on the dialogue box.

6 On the **Action** menu, click **New Remote Access Policy**. The **New Remote Access Policy Wizard** is displayed.

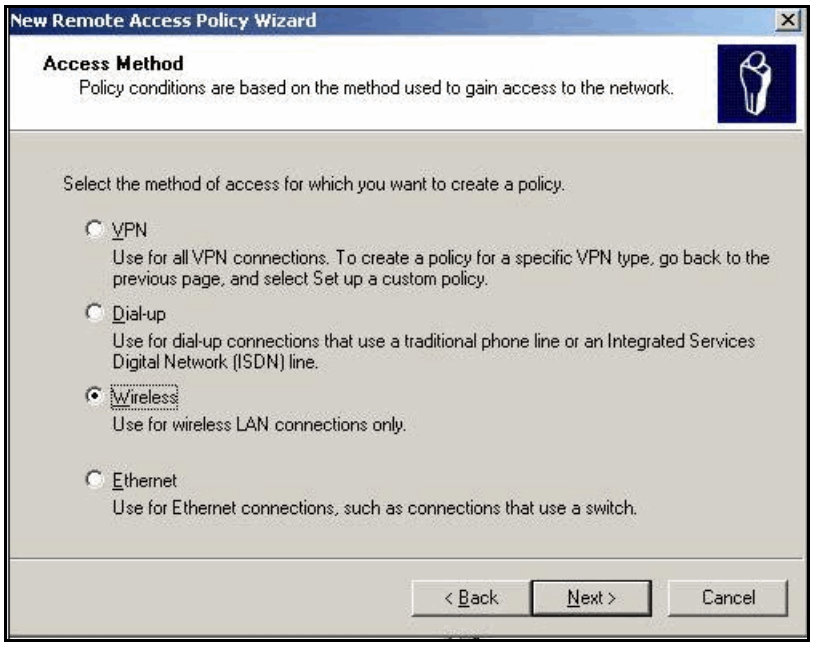
New Remote Access Policy Wizard
Welcome to the New Remote Access Policy Wizard
This wizard helps you set up a remote access policy, which is a set of conditions that determine which connection requests are granted access by this server.
To continue, click Next.
< Back
Next >
Cancel

7 Click **Next**. The **Policy Configuration Method** window is displayed.

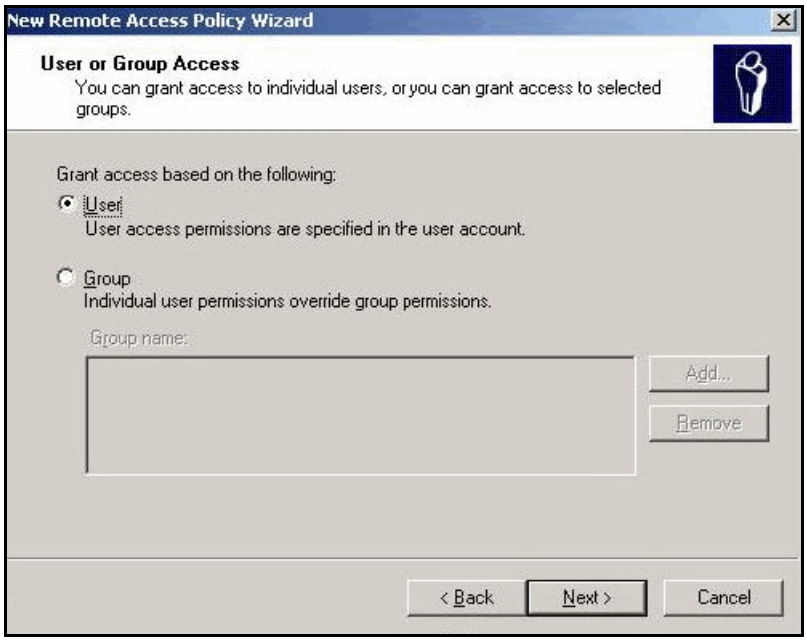

New Remote Access Policy Wizard
Policy Configuration Method
The wizard can create a typical policy, or you can create a custom policy.
How do you want to set up this policy?
Use the wizard to set up a typical policy for a common scenario
Set up a custom policy
Type a name that describes this policy.
Policy name:
Example: Authenticate all VPN connections.
< Back
Next >
Cancel

8 Select **Use the wizard to set up a typical policy for a common scenario**.

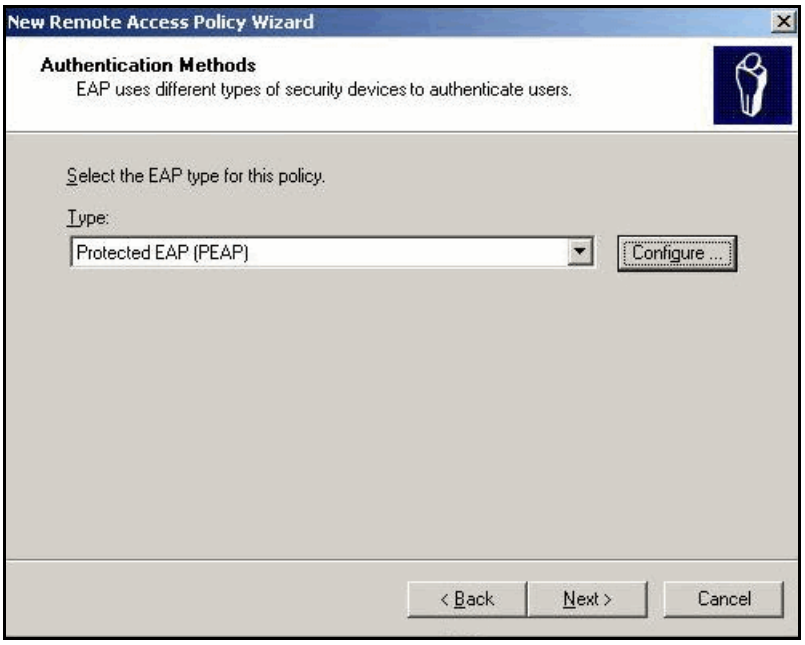
9 In the **Policy name** text box, type the name you want to assign to the policy, and then click **Next**. The **Access Method** window is displayed.


New Remote Access Policy Wizard
Access Method
Policy conditions are based on the method used to gain access to the network.
Select the method of access for which you want to create a policy.
VPN
Use for all VPN connections. To create a policy for a specific VPN type, go back to the previous page, and select Set up a custom policy.
Dial-up
Use for dial-up connections that use a traditional phone line or an Integrated Services Digital Network (ISDN) line.
Wireless
Use for wireless LAN connections only.
Ethernet
Use for Ethernet connections, such as connections that use a switch.
< Back
Next >
Cancel

10 Select **Wireless** and then click **Next**. The **User or Group Access** window is displayed.


New Remote Access Policy Wizard
User or Group Access
You can grant access to individual users, or you can grant access to selected groups.
Grant access based on the following:
User
User access permissions are specified in the user account.
Group
Individual user permissions override group permissions.
Group name:
Add...
Remove
< Back
Next >
Cancel

11 Select **User** or **Group**, and click **Next**. The **Authentication Methods** window is displayed.



12 Select **Protected EAP (PEAP)** or **Smart card or other certificate**, and click **Next**.

13 Click **Finish**. The new policy is displayed in the right pane.

14 In the right pane, select and right-click the newly configured remote access policy.

15 Select **Properties**. The **Properties** window is displayed.

16 Select **Grant Remote Access Permission**.

17 Click **Apply** and then click **OK**.

18 Click **Add**. The **Attributes** window is displayed.

19 Select **IP address**. The **Client IP-Address** window is displayed.

20 In the **Client IP-Address** window, type the Summit WM Controller's IP address.

21 Click **OK**.

DNS service configuration

The domain name system (DNS) stores and associates many types of information with domain names, but most importantly, it translates domain names (computer hostnames) to IP addresses.

You must install DNS on Windows 2003 Server according to the documents provided with the server. Visit http://support.microsoft.com to learn how to install DNS on Windows 2003.

The DNS configuration involves two steps:

- Step 1 – Configuring the DNS for internet access
- Step 2 – Configuring DNS for Wireless APs discovery.

Configuring DNS for internet access

To configure DNS for internet access:

1 Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Configure Your Server Wizard**.

2 Click **Next**. The **Summary of Selections** window is displayed.

NOTE

*The **Summary of Selections** window should list the following two items: **Install DNS** and **Run the Configure a DNS Wizard to configure DNS**.*
*If the **Summary of Selections** window does not list these two items, you must:*
- *Click **Back** to return to DNS Server Roles window.*
- *Click **DNS**.*
- *Click **Next**.*

3 In the **Summary of Selections** window, click **Next**. The **Select Configuration Action** window is displayed.

When the **Configure Your Server** wizard installs the DNS service, it first determines whether the IP address for this server is static or the server is configured to secure it automatically.

If your server is currently configured to obtain its IP address, the wizard prompts you to configure the server with a static IP address instead of displaying the **Select Configuration Action** window.

To configure the server with a static IP address:

a In the **Local Area Connection Properties**, click **Internet Protocol** (TCP/IP), and then click **Properties**. The **Internet Protocol (TCP/IP) Properties** window is displayed.

b In the **Internet Protocol (TCP/IP) Properties** window, click **Use the following IP address**.

c In the **Static IP address**, **Subnet mask**, and the **Default gateway** text boxes, type the static IP address, the subnet mask and the IP address of the default gateway respectively.

d In the **Preferred DNS** text box, type the IP address of the server.

e In the **Alternate DNS** text box, type the IP address of another internal DNS server.

The **Alternate DNS** text box is optional.

a Click **OK**, and then click **Close**.

4 In the **Select Configuration Action** window, select the **Create a forward lookup zone** checkbox, and then click **Next**. The **Primary Server Location** window is displayed.

5 In the **Primary Server Location** window, select **This server maintains the zone**, and then click **Next**. The **Zone name** window is displayed.

6 In the **Zone name** text box, type the name of the **DNS zone for your network**, and then click **Next**. The **Dynamic Update** window is displayed.

The zone name is identical to the DNS domain for small organization or branch office.

7 In the **Dynamic Update** window, click **Allow both nonsecure and secure dynamic updates**, and then click **Next**. The **Forwarders** window is displayed.

8 In the **Forwarders** window, click **Yes, it should forward queries to DNS servers with the following IP addresses**.

When you select this feature, all DNS queries for DNS names are forwarded to a DNS at either your ISP or central office.

9 In the **IP addresses** text box, type one or more IP addresses that either your ISP or central office DNS servers use, and click **Next**.

10 Click **Finish**. The wizard displays the following message: **This server is Now a DNS Server**.

Configuring DNS for Wireless APs discovery

To configure DNS for Wireless APs discovery:

1 Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **DNS**.

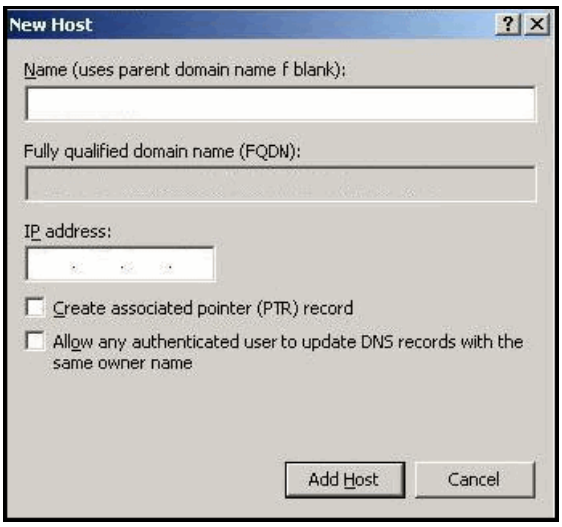
2 Select the domain.

3 In the **Action** menu, select **New Domain**. The **New DNS Domain** window is displayed.

4 In the **New DNS Domain** window, type the name for the new domain.

5 Restart the service. The new domain is displayed as the child domain.

6 Right-click the new domain name, and select **New Host**. The **New Host** window is displayed.


New Host
Name (uses parent domain name f blank):
Fully qualified domain name (FQDN):
IP address:
Create associated pointer (PTR) record
Allow any authenticated user to update DNS records with the same owner name
Add Host
Cancel

7 In the **Name** text box, type the Summit WM Controller's name.

8 In the **IP address** text box, type the Summit WM Controller's IP address.

9 Select **Create associated pointer (PTR) record** checkbox.

10 Click **Add Host**. The new host is displayed in the right pane of the screen.

11 Quit DNS.

Now you must configure the Wireless APs via the Summit WM Controller.

6 Wireless AP configuration

This chapter describes how to configure and manage the Wireless APs.

The topics in this chapter are organized as follows:

- Wireless AP overview
- Configuring the Wireless APs for the first time
- Assigning names to Wireless APs
- Modifying Wireless APs' properties
- Configuring static IP address for Wireless APs
- Configuring VLAN tags for Wireless APs
- Wireless AP's LED states

Wireless AP overview

Wireless APs are enterprise-class access points that deliver secure wireless access via the layer 3 tunnel for enterprise deployments. They provide advanced RF capabilities, security, reliability and scalability.

The Wireless APs provide an unmatched level of flexibility and performance for complex, time-sensitive functions including QoS, encryption and rogue AP detection.

The Wireless APs, by default, do not have a graphical user interface (GUI); they are configured and managed by the Summit WM GUI. In addition, you can centrally manage (verify and upgrade) the Wireless AP firmware image via the Summit WM GUI.

All communication between the Summit WM Controller and the Wireless AP is carried out using a UDP-based protocol. The IP traffic, coming from the Wireless AP is encapsulated, and is directed to the Summit WM Controller. The Summit WM Controller decapsulates the packets and routes them to the appropriate destinations while managing sessions and applying policy.

The Wireless AP comes in the following three variants:

- Altitude AP
- Outdoor AP (Siemens brand of outdoor AP)
- Altitude 802.11n AP

NOTE

The term, 'Wireless AP', is used in this document to encompass all the three variants — Altitude AP and Outdoor AP (Siemens) and Altitude 802.11n AP. The variants are identified specifically at only those places where it is necessary to do so.

NOTE

The configuration process is same for all three variants — Altitude AP, Outdoor AP, and Altitude 802.11n AP — and is done via the Summit WM Controller.

Altitude AP

The Altitude AP is meant for indoor environments. It can be mounted on walls or ceilings, using special brackets, and can be kept completely out of sight.

The Altitude AP is available in the following two models:

- **Altitude 350-2i** – Internal antenna, internal dual (multimode) diversity antennas
- **Altitude 350-2d** – External antenna (dual external antennas), RP-SMA connectors

NOTE

Since the Altitude AP is meant for indoor environments, it is also referred to as Indoor AP.

Outdoor AP

The Outdoor AP enables you to extend your Wireless LAN beyond the confines of indoor locations. They are resistant to harsh outdoor conditions and extreme temperatures. Using the advanced wireless distribution feature of Summit WM Wireless LAN, the Outdoor AP can extend your Wireless LAN to outdoor locations without Ethernet cabling. A mounting bracket is available to enable quick and easy mounting of the Outdoor APs to walls, rails and poles.

NOTE

Although the Outdoor AP is meant for outdoor environments, it can also be deployed in indoor environments.

The Outdoor AP supports the 802.11a, 802.11g and full backward compatibility with legacy 802.11b devices.

NOTE

Since the Outdoor AP is meant for outdoor environments, it is also referred to as Outdoor AP.

Altitude 802.11n AP

The Altitude 802.11n AP is an IEEE 802.11n (draft)-compliant access point that offers significant increase in data throughput and coverage range without additional bandwidth or transmit power. With both 2.4 GHz and 5 GHz 802.11n (draft) standard radio modules, the 802.11n AP delivers total data rates of up to 300 Mbps. Given that the improved throughput of 300 Mbps will be spread over a number of simultaneous users, the performance of 802.11n AP will be close to that of a wired 100 Mbps Ethernet connection — the standard for desktop connectivity. With the 802.11n AP, the mobile users get the

experience similar to wired networks while accessing high-bandwidth data, voice, and video applications.

The Altitude 802.11n AP is available in the following two models:

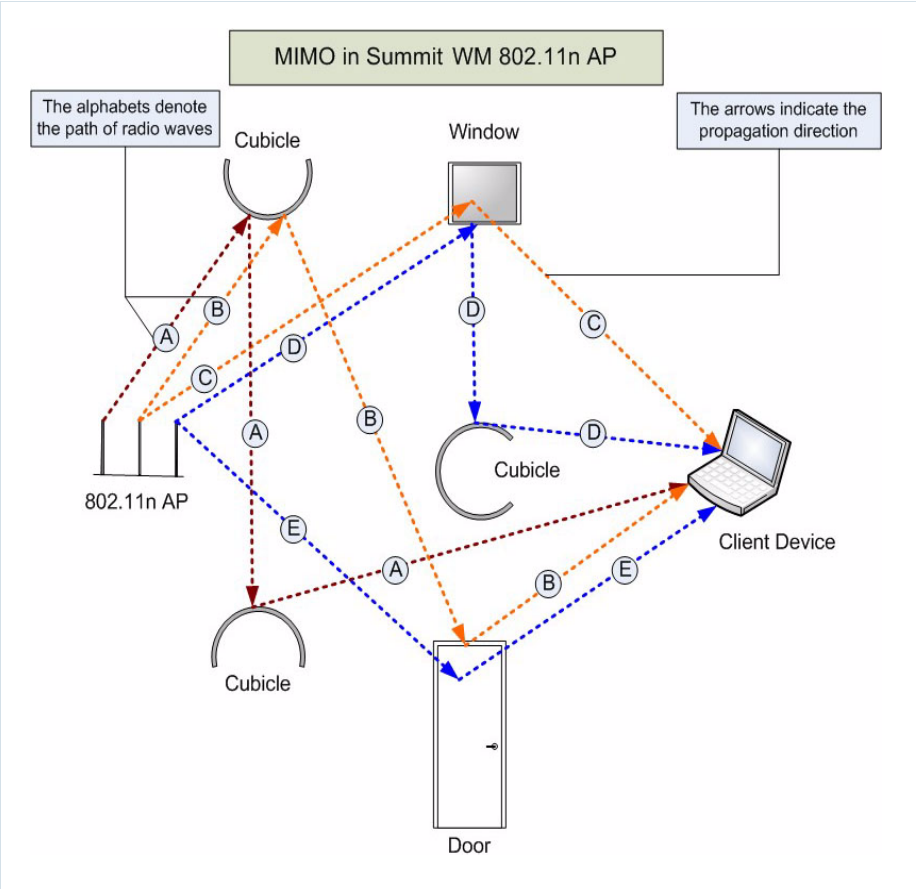
- **Altitude 450** – 3 internal antennas
- **Altitude 451** – 3 internal antennas, RP-SMA connectors

MIMO

The pivot of 802.11 AP is MIMO (multiple input, multiple output) — a technology that uses advanced signal processing with multiple antennas to improve the throughput. MIMO takes the advantage of multipath propagation to decrease packet retries to improve the fidelity of the wireless network.

The 802.11n AP's MIMO radio sends out three radio signals at the same time through its three radio transceivers. Each of these signals is called a spatial stream. Each spatial stream is sent out from its own transceiver, using its own antenna. Because the location of the antennas on the 802.11n AP is spaced out, each spatial stream follows a slightly different path to the client devices. Furthermore, the three spatial streams get multiplied into several streams as they bounce off the obstructions in the vicinity. This phenomenon is called multipath. Since these streams are bounced from different surfaces, they follow different paths to the client device. The client device, which is also 802.11n compliant, too has multiple antennas. Each of the antennas independently decodes the arriving signal. Then each antenna's decoded signal is combined with the decoded signals from the other antennas. After a complex calculation via the software algorithm, the result is much better signal and increased throughput.

Figure 15: MIMO in Altitude 802.11n AP



The installation of 802.11n APs is also made easy – the 802.11n APs do not need to be deployed in the client device's "line of sight". On the contrary, the 802.11n APs work better when radio signals bounce off the obstructions that are typical of any indoor wireless LAN environment — cube walls, doors, partitions etc. — to reach the client device. Greater the number of bounces, more the number of streams reaching the client device, and better the phenomenon of multipath.

NOTE

*MIMO should not be confused with **Diversity** feature. While the **Diversity** is the use of two antennas to increase the odds that a better radio stream is received on either of the antennas, MIMO antennas radiate and receive multi-streams of the same packet to achieve the increased throughput.*
*The **Diversity** feature is meant to beat the liability of RF corruption, arising out of multipath, whereas MIMO converts the liability of multipath to its advantage.*

MIMO also enhances 'radio receive sensitivity', and improves noise rejection.

Channel bonding

In addition to MIMO technology, 802.11n AP makes a number of additional changes to the radio to increase the effective throughput of the Wireless LAN. The radios of regular Altitude APs use radio channel spacings that are 20 MHz wide. The radios of 802.11n AP use two channels at the same time i.e., 40 MHz wide. By using the two 20 MHz channel in this way, 802.11n AP achieves double

throughput. The 40-MHz channels in 802.11n are two adjacent 20-MHz channels, bonded together. This technique of using two channels at the same time is called channel bonding.

Shortened guard interval

The purpose of the guard interval is to introduce immunity to propagation delays, echoes and reflections of symbols in orthogonal frequency division multiplexing (OFDM) — a method by which information is transmitted via a radio signal in Wireless APs.

In OFDM method, the beginning of each symbol is preceded by a guard interval. As long as the echoes falls within this interval, they will not affect the safe decoding of the actual data, as data is only interpreted outside the guard interval. Longer guard periods reduce the channel efficiency. The 802.11n AP provides reduced guard periods, thereby increasing the throughput.

MAC enhancements

The 802.11n AP also has improved MAC layer protocol that reduces the overheads (in the MAC layer protocol) and the contention losses. This again results in increased throughput.

NOTE

The Altitude 802.11n AP is backward-compatible with existing 802.11a/b/g networks.

NOTE

The Altitude 802.11n AP cannot operate as a stand-alone access point.

The 802.11n AP is available in the following two models:

- **Altitude 450** – Three internal antennas
- **Altitude 451** – Three external antennas

NOTE

The 802.11n AP cannot be deployed in an outdoor environment.

Wireless AP's default IP address and first-time configuration

Wireless APs are shipped from the factory with a default IP address — 192.168.1.20. The default IP address simplifies the first-time IP address configuration process for Wireless APs. The Wireless AP returns to its default IP address if it is not successful in its discovery process.

The Wireless APs can have their IP addresses assigned using either of the following two methods — a Dynamic Host Configuration Protocol (DHCP) server assigns the IP address, or an administrator assigns the IP address using the static configuration option. The DCHP IP address assignment method is the

default method for Wireless AP configuration. The Wireless AP default IP address impacts the first-time configuration processes for both methods:

- **DHCP server** – If successful, the Wireless AP is assigned an IP address by the network's DHCP server when the Wireless AP is powered on.
  - If the DHCP assignment is not successful in the first 60 seconds, the Wireless AP returns to its default IP address.
  - The Wireless AP waits for 30 seconds in default IP address mode before attempting again to acquire the IP address from the DHCP.
  - The process repeats itself until the DHCP assignment is successful, or until an administrator assigns the Wireless AP an IP address using static configuration.

NOTE

You can telnet the Wireless AP during the 30 seconds the Wireless AP is assigned its default IP address. If a static IP address is assigned during this period, you must reboot the Wireless AP for the configuration to take effect.

- **Static configuration** – Power up the Wireless AP, connect it to a laptop, and then ping its default IP address.
  - If the ping is successful, telnet the Wireless AP within 30 seconds and configure the static IP address.

If the Wireless AP is not configured within the 30 seconds, it again attempts to get the IP address via the DHCP assignment.

NOTE

For more information on how to telnet the Wireless AP, see the Summit WM CLI Reference Guide.

NOTE

For more information on Wireless APs default IP address, see the Summit WM User Guide.

Configuring the Wireless APs for the first time

Before you start configuring the Wireless APs, ensure that you have:

- Set-up, installed and configured the Summit WM Controller.
- Installed the Wireless APs at the location indicated by your site survey.

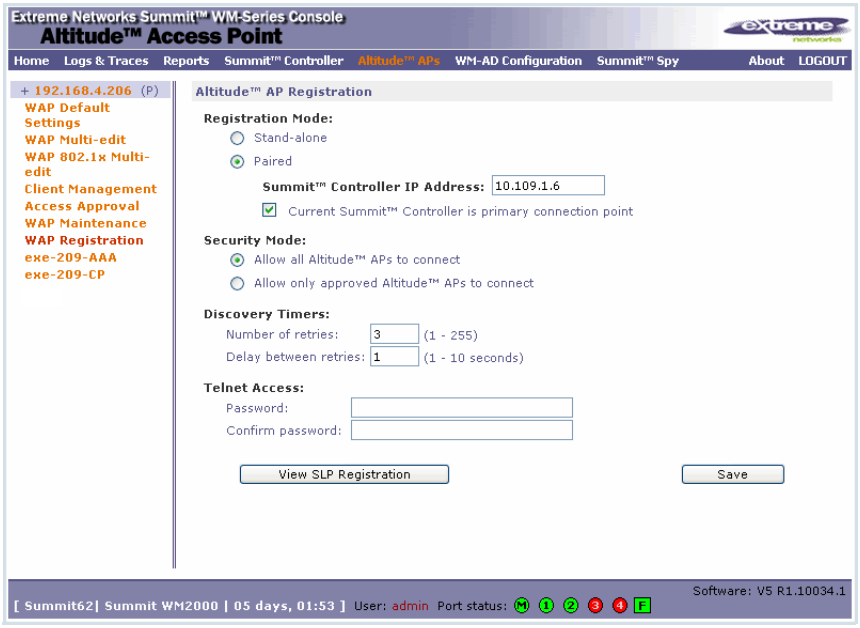
NOTE

- *If you are installing the Altitude AP, see the* Altitude 350-2i/350-2d AP Installation Guide.
- *If you are installing the Outdoor AP, see the* Outdoor AP Installation Guide.
- *If you are installing the Altitude 802.11n AP, see the* Altitude 802.11n AP Installation Guide.

- **To configure the Wireless APs for the first time**:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed.

2 In the left pane, click **WAP Registration**.



3 In the **Security Mode** section, select one of the following options:

NOTE

Security mode is a Summit WM Controller property. It defines how the Summit WM Controller behaves when registering new devices. During the registration process, the Summit WM Controller's approval of the Wireless APs depends on the security mode that has been set.

- Allow all APs to connect:
  - If the Summit WM Controller does not recognize the registering serial number, a new registration record is automatically created for the Wireless AP. The Wireless AP receives a default configuration.
  - If the Summit WM Controller recognizes the serial number, it indicates that the registering device is pre-registered with the Summit WM Controller. The Summit WM Controller uses the existing registration record, and existing configuration record to authenticate and configure the Wireless AP respectively.
- **Allow only approved Wireless APs to connect**:
  - If the Summit WM Controller does not recognize the Wireless AP, the Wireless AP's registration record is created in pending state. You must manually approve a pending Wireless AP. As long as the Wireless AP is in pending state, it receives minimum configuration that only allows it to maintain an active link with the Summit WM Controller for future state change. For more information, see "Manually approving pending Wireless APs" on page 74.
  - If the Summit WM Controller recognizes the serial number, it uses the existing registration record to authenticate the Wireless AP. Following the successful authentication, the Wireless AP is configured according to its stored configuration record.

4 In the **Discovery Timers** section, type the discovery timer values in the following text boxes:
   - **Number of retries** – Limited to 255 in a five minute discovery period. The default value is 3.
   - **Default between retries** – The default value is 1 second.

5 To save your changes, click **Save**.

6 To initiate the discovery and registration process, connect the Wireless AP to a power source.

   The Wireless APs can be connected and powered in several ways. For more information, see the following section.

Powering the Wireless APs

Altitude AP

The Altitude AP can be connected, and powered in the following ways:

- Power over Ethernet (802.3af):
  - PoE enabled switch port
  - PoE Injector
- Power by AC adaptor

Outdoor AP

The Outdoor AP can be connected, and powered in the following ways:

- Power over Ethernet
  - PoE enabled switch port
  - PoE Injector
- Power by 48 V direct voltage
- 110-230 V DC direct voltage

For more information, see the *Outdoor AP Installation Guide*.

Altitude 802.11n AP

The Altitude 802.11n can be connected, and powered in the following ways:

- Power over Ethernet
  - PoE enabled switch port
  - PoE Injector
- Power by 48 V direct voltage

Manually approving pending Wireless APs

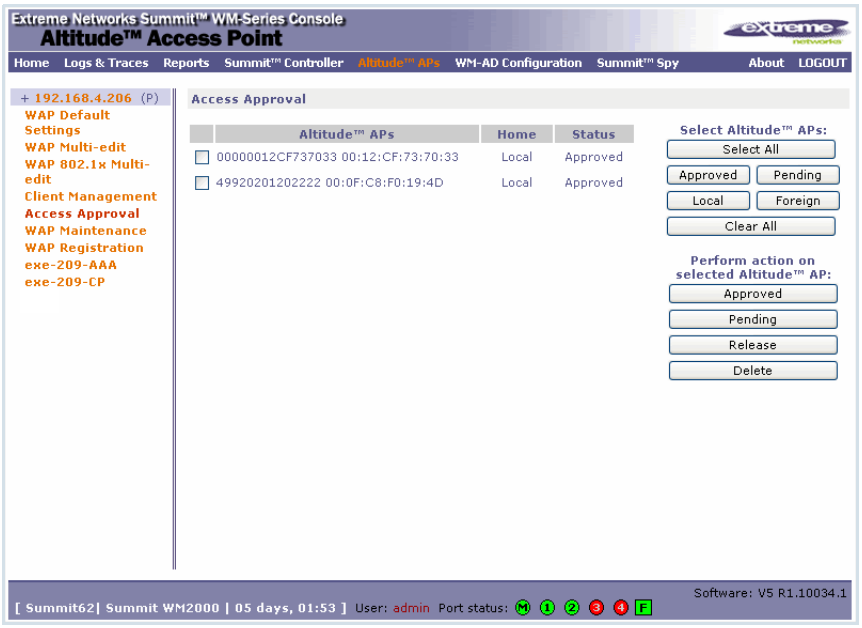
If the Summit WM Controller does not recognize the Wireless AP, the Wireless AP's registration record is created in pending state. You must manually approve a pending Wireless AP. As long as the Wireless

AP is in the pending state, it receives minimum configuration that only allows it to maintain an active link with the Summit WM Controller for future state change.

To manually approve pending Wireless APs:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed

2 In the left pane, click **Access Approval**. The **Access Approval** screen is displayed.



3 In the **Select Altitude APs** section, click **Pending**. The pending Wireless APs are selected.

4 In the **Perform action on selected Wireless APs**, click **Approved**. The state of the selected Wireless APs is changed from “Pending” to “Approved”.

Assigning names to Wireless APs

After the Wireless APs are successfully registered, you can assign them appropriate names.

To assign a name to a Wireless AP:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed.

2 In the **Altitude APs** list, click the **Wireless AP** for which you want to assign a name. The **AP Properties** tab is displayed.

3 In the **Name** text box, type the name that you want to assign to the selected Wireless AP.

4 To save your changes, click **Save**.

NOTE

*You can modify the Wireless AP’s properties that are displayed in the right pane of the **Altitude AP** screen. For more information, see “Modifying Wireless APs’ properties” on page 76.*

Modifying Wireless APs' properties

After the Wireless APs are successfully registered, you can modify their properties.

To modify the Wireless AP's properties:

1 From the main menu, click **Altitude APs**. The **Altitude AP** screen is displayed.

2 In the **Altitude APs** list, click the **Wireless AP** for which you want to modify the properties. The **AP Properties** tab is displayed.

The AP Properties displays the following properties:

- **Name** – By default, this text box contains the serial number of the Wireless AP.
- **Description** – Short description of the Wireless AP.
- **AP Environment** – Wireless AP's environment — **Indoor** or **Outdoor**.

NOTE

*The **AP Environment** field is displayed on the **AP Properties** screen only if the selected Wireless AP is the Outdoor Wireless AP.*
*Since the Outdoor Wireless AP can be deployed in an indoor and an outdoor environment, the **AP Properties** screen enables you to specify the environment.*
*If the selected Wireless AP is the Altitude AP, the **AP Properties** screen will not display the **AP Environment** field. The reason is that the Altitude AP is always deployed in the indoor environment.*

- **Poll Timeout** – The timeout value for polling the Summit WM Controller. The value is in seconds. The default value is 15 seconds.
- **Poll Interval** – The time interval during which the polling will occur. The value is in seconds. The default value is two seconds.
- **Telnet Access** – The option to enable/disable the telnet access to the Wireless AP. The default value is disabled.
- **Maintain client session in event of poll failure** – Select this option, if you want the Wireless AP to remain active in case the link with the Summit WM Controller is lost. This allows service for the branch WM-ADs to continue during temporary network outages.

NOTE

*Since the Altitude 802.11n AP cannot work as a stand-alone AP, the **Maintain client session in event of poll failure** parameter is not displayed on the **AP Properties** page if the selected Wireless AP is 802.11n AP (Altitude 450/451).*

- **Restart service in the absence of controller** – Select this option (if using a bridged at AP WM-AD) to ensure that the Wireless APs continue providing service even if their connectivity to the Summit WM Controller is lost.

NOTE

*The **Restart service in the absence of controller** parameter is not displayed on the **AP Properties** page if the selected Wireless AP is 802.11n AP (Altitude 450/451).*

- **User Broadcast for disassociation** – Select this feature, if you want the Wireless AP to use broadcast disassociation when disconnecting all wireless devices instead of disassociating each client one by one. This feature is disabled by default.

NOTE

*The **Use broadcast for disassociation** parameter is not displayed on the **AP Properties** page if the selected Wireless AP is 802.11n AP (Altitude 450/451).*

- **Country** – Where the Wireless AP operates.

The following properties are view only on the **AP Properties** tab:

- **Serial #** – A unique identifier that is assigned during the manufacturing process of the Wireless APs.
- **Port #** – Summit WM Controller's ethernet port to which the Wireless AP is connected.
- **Hardware Version** – The current version of the Wireless AP hardware.
- **Application Version** – The current version of the Wireless AP software.
- **Status** – The Wireless AP state:
  - **Approved** – Indicates that the Wireless AP has received its binding key from the Summit WM Controller in the discovery process.
  - **Pending** – Indicates that the Wireless AP has not been approved as yet to access the Summit WM Controller. Pending Wireless APs will not provide service to client devices until they are approved.
- **Active Clients** – The number of wireless devices that are currently active on the Wireless AP.

3 Modify other properties according to your operational needs.

4 To save your changes, click **Save**.

NOTE

You can also modify the Wireless AP's radio properties. For more information, see the Summit WM User Guide.

Configuring static IP address for Wireless APs

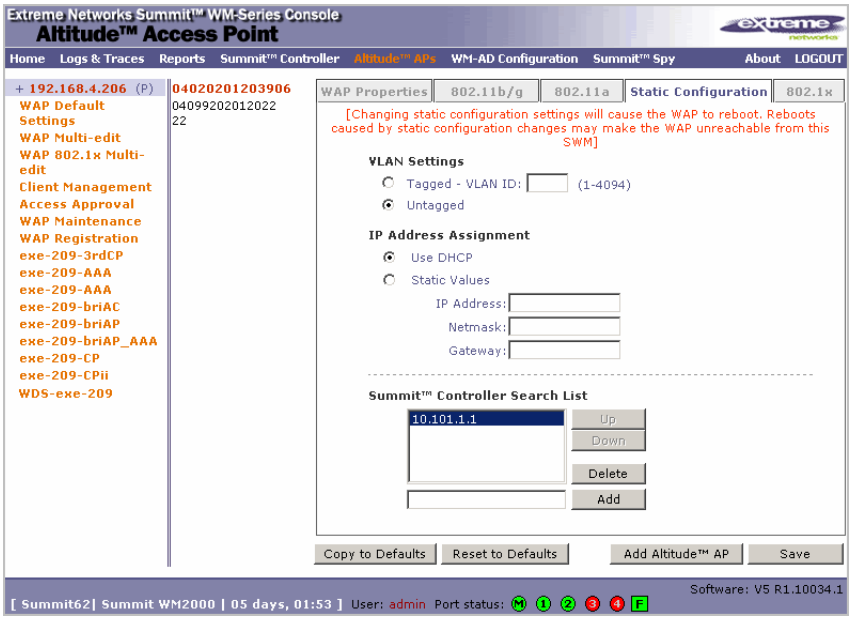
Wireless AP static configuration can be used in both central office and branch office deployments. In order to ensure that the static IP configuration is done correctly, you must use the DHCP initially to obtain an IP address for the Wireless AP. Then use these values in the static IP address configuration.

- **Step 1** – Use the DHCP Server to acquire the IP address
- **Step 2** – Configure the acquired IP address (or any other assigned IP address) as the Static IP address for the Wireless AP.

To configure a static IP address for the Wireless AP:

1 From the main menu, click **Altitude APs**. The **Altitude APs** screen is displayed.

2 Click the **Static Configuration** tab. The **Configuration Settings** screen is displayed.



3 In the **IP Address Assignment** section, select **Use DHCP.**

4 In the **Add** text box, type the IP address of the Summit WM Controller that will manage this Wireless AP.

5 Click **Add**. The IP address is added to the list.

6 Repeat Steps 4 to 5 to add additional Summit WM Controllers.

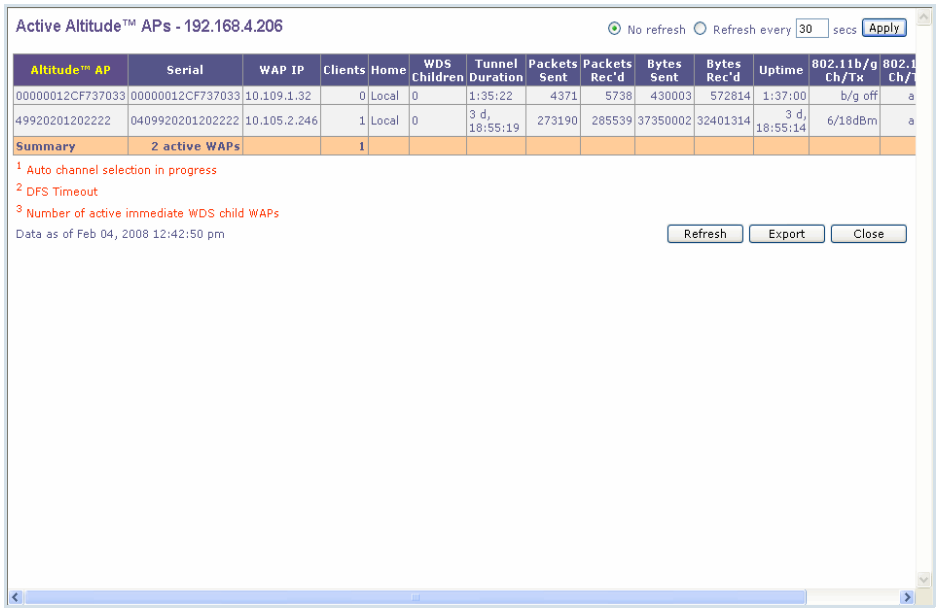
The Wireless AP attempts to connect to the IP addresses (of the Summit WM Controllers) in the order in which they are listed in the **Summit Controller Search List**. This feature allows the Wireless AP to bypass the discovery process. If the **Summit Controller Search List** is not populated, the Wireless AP will use SLP to discover a Summit WM Controller.

7 To save your changes, click **Save**. The Wireless AP reboots.

8 From the main menu, click **Reports**. The **Reports and Displays** screen is displayed.

Extreme Networks Summit™ WM-Series Console
Reports & Displays
Home Logs & Traces Reports Summit™ Controller Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Displays: List of Displays • Reports: Forwarding Table | OSPF Neighbor | OSPF Linkstate | WAP Inventory
Active Altitude™ APs
Active Clients by Altitude™ AP
Active Clients by WM-AD
Port & WM-AD Filter Statistics
WM-AD Interface Statistics
Summit™ Controller Port Statistics
Altitude™ AP Availability
Dynamic Authorization Statistics
Wired Ethernet Statistics by Altitude™ AP
Wireless Statistics by Altitude™ AP
WDS WM-AD Altitude™ AP Statistics
System Information
Agent Mobility Tunnel Matrix
Manufacturing Information
Software: V5 R1.10034.1
[Summit62| Summit WM2000 | 05 days, 01:53] User: admin Port status:

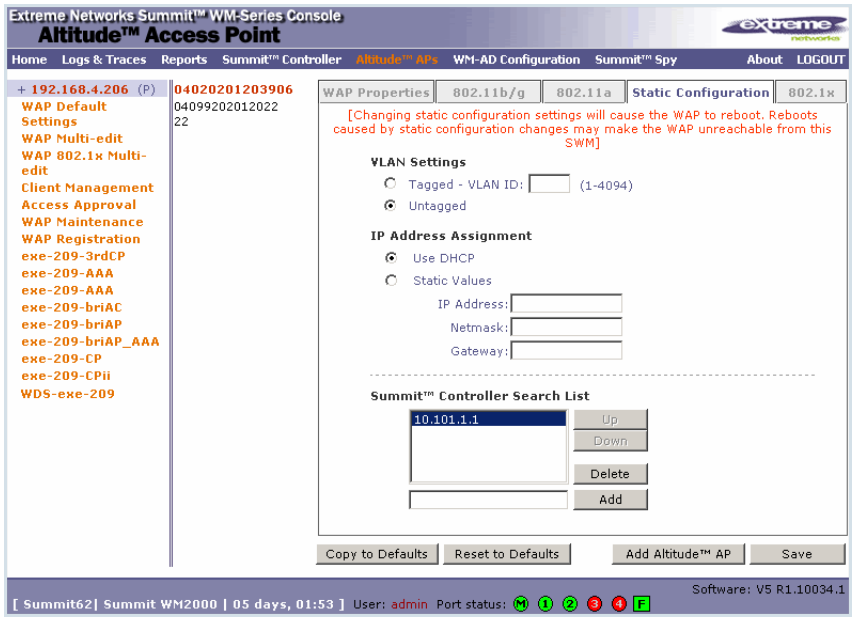
9 Click **Active Altitude APs**. A list of active Wireless APs is displayed with the corresponding IP addresses assigned to them by the DHCP server.


Active Altitude™ APs - 192.168.4.206
No refresh Refresh every 30 secs Apply
Altitude™ AP | Serial | WAP IP | Clients | Home | WDS Children | Tunnel Duration | Packets Sent | Packets Rec'd | Bytes Sent | Bytes Rec'd | Uptime | 802.11b/g Ch/Tx | 802.1 Ch/T
00000012CF737033 | 00000012CF737033 | 10.109.1.32 | 0 | Local | 0 | 1:35:22 | 4371 | 5738 | 430003 | 572814 | 1:37:00 | b/g off | a
49920201202222 | 0409920201202222 | 10.105.2.246 | 1 | Local | 0 | 3 d, 18:55:19 | 273190 | 285539 | 37350002 | 32401314 | 3 d, 18:55:14 | 6/18dBm | a
Summary | 2 active WAPs | 1
1 Auto channel selection in progress
2 DFS Timeout
3 Number of active immediate WDS child WAPs
Data as of Feb 04, 2008 12:42:50 pm
Refresh Export Close

10 Locate the Wireless AP for which you are configuring the static IP address in the list, and the corresponding IP address.

11 From the main menu, click **Altitude APs**. The **Altitude APs** screen is displayed.

12 Click the **Static Configuration** tab.



13 In the IP Address Assignment section, select **Static Values**.

14 In the **IP Address** text box, type the IP address that you obtained by using the DHCP server (or any other assigned IP address).

15 In the **Netmask** text box, type the appropriate subnet mask to separate the network portion from the host portion of the address.

16 In the **Gateway** text box, type the default gateway of the network.

17 To save your changes, click **Save**. The Wireless AP reboots.

Configuring VLAN tags for Wireless APs

You must exercise caution while configuring VLAN ID tag. If a VLAN tag is not configured properly, the connectivity between the Summit WM Controller and the Wireless AP will be lost.

NOTE

To configure the VLAN tag for Wireless AP, you must connect the Wireless AP to a point on the central office network that does not require VLAN tagging. If the VLAN tagging is configured correctly and you are still on the central office network, the Wireless AP will lose connection with the Summit WM Controller after it is rebooted (the Wireless AP reboots when the configuration settings are saved). If the Wireless AP does not lose connection with the Summit WM Controller after the reboot, it indicates that the VLAN ID has not been configured correctly. This provides a feedback on whether you have configured the VLAN tag correctly. After the VLAN is configured correctly, you can move the Wireless AP to the target location.

To configure Wireless APs with a VLAN tag:

1 Connect the Wireless AP in the central office to the Summit WM Controller port (or to a network point) that does not require VLAN tagging.

2 In the **VLAN Settings** section, select **Tagged - VLAN ID**.

3 In the **Tagged - VLAN ID** text box, type the VLAN ID on which the Wireless AP will operate.

4 To save your changes, click **Save**. The Wireless AP reboots and loses connection with the Summit WM Controller.

5 Log out from the Summit WM Controller.

6 Disconnect the Wireless AP from the central office network and move it to the target location.

7 Power the Wireless AP. The Wireless AP connects to the Summit WM Controller.

If the Wireless AP does not connect to the Summit WM Controller, it implies that the Wireless AP was not configured properly. To recover from this situation, you must reset the Wireless AP to its factory default settings, and reconfigure the static IP address. For more information, see "Resetting the Wireless AP to its factory default settings" on page 81.

Resetting the Wireless AP to its factory default settings

You can reset the Altitude 802.11n AP and the Outdoor AP to their factory default settings.

Resetting the Altitude AP to its factory default settings.

The Wireless AP boot-up sequence includes a random delay interval, followed by a vulnerable time interval. During the vulnerable time interval (2 seconds), the LEDs flash in a particular sequence to indicate that the Summit WM Controller is in the vulnerable time interval. For more information, see "Wireless AP's LED states" on page 83.

If you power up the Wireless AP and interrupt the power during the vulnerable time interval three consecutive times, the fourth time the Wireless AP reboots, it will restore its factory defaults including the user password and the default IP settings.

To reset the Wireless AP to its factory default settings:

1 Switch off, and then switch on the Altitude AP. The Altitude AP reboots.

2 Switch off, and then switch on the Altitude AP during the vulnerable time interval.

NOTE

You should refer to the Altitude AP's LED pattern to determine the vulnerable period. For more information, see "Altitude AP LED status" on page 84.

3 Repeat Step 2 two more times.

When the Altitude AP reboots for the fourth time, after having its power supply interrupted three consecutive times, it restores its factory default settings. The Altitude AP then reboots again to put the default settings into effect.

NOTE

You should refer to the Altitude AP's LED pattern to confirm that the Altitude AP is set to its factory defaults. For more information, see "Altitude AP LED status" on page 84.

Reset button (Hardware)

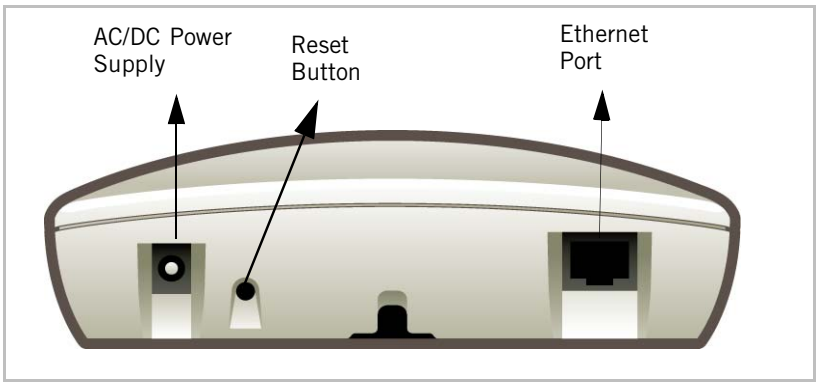
Some models of the Altitude AP have a reset button. If your model is equipped with a reset button, you can set it to its factory default settings by pressing and holding the reset button for approximately six seconds.

NOTE

If you press the reset button and do not hold it over six seconds, the Altitude AP will merely reboot, and not reset to its factory defaults.

The following figure illustrates the location of the reset button on the Altitude AP.

Figure 16: Position of reset button in the Altitude AP



Resetting the Outdoor AP to its factory default settings

All models of the Outdoor AP have a reset button.

You can set the Outdoor AP to its factory default settings by pressing and holding the reset button for approximately six seconds.

NOTE

If you press the reset button and do not hold it over six seconds, the Outdoor AP will merely reboot, and not reset to its factory defaults.

The following figure illustrates the location of the reset button on the Outdoor AP.

Figure 17: Position of the reset button with the housing cover removed

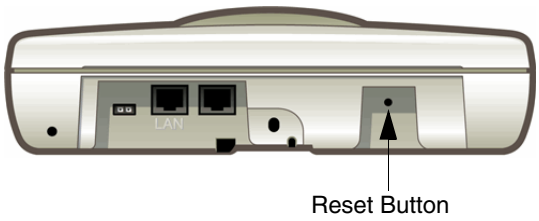
CAUTION

The reset button is located below the housing cover beside the sockets for the external antennas. To access the reset button, you must remove the housing cover. For more information, see the Outdoor AP Installation Guide.

Resetting the Altitude 802.11n AP to its factory default settings

You can set the Altitude 802.11n AP to its factory default settings by pressing and holding the reset button for approximately four seconds.

Figure 18: Position of the reset button on the Altitude 802.11n AP



NOTE

If you press the reset button and do not hold it over four seconds, the Altitude 802.11n AP will merely reboot and not reset to its factory defaults.

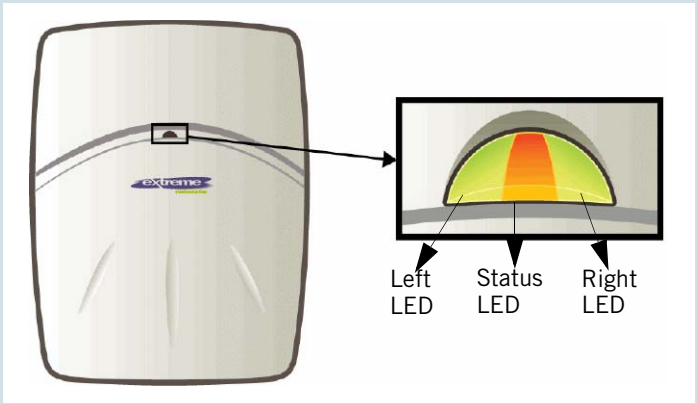
Wireless AP's LED states

When the Wireless AP is powered on and boots, you can follow its progress through the registration process by observing the LED sequence as described in the following sections.

Altitude AP LED status

The following figure depicts the location of the three LEDs on the Altitude AP.

Figure 19: Altitude AP LEDs



WARNING!

Never disconnect a Wireless AP from its power supply during a firmware upgrade. Disconnecting a Wireless AP from its power supply during a firmware upgrade may cause firmware corruption rendering the AP unusable.

LEDs color codes

The AP LEDs indicate "normal-operation", "warning/special", or "failed" state of the Wireless AP in the following color codes:

- Green – Indicates the normal-operation state.
- Orange/Amber – Indicates the warning, or special state such as WDS.
- Red – Indicates the error state.
- Blinking – Indicates that the state, such as initialization, or discovery is in progress.
- Steady – Indicates that the state is stable/completed. For example, initialization finished, or discovery completed.

Center LED

The Center LED indicates the general status of the Wireless AP:

Table 7: Center LED and Wireless AP's status

Center LED	Altitude AP's status
Blinking Green	Initialization and discovery in progress via Ethernet link
Blinking Orange/Amber	Initialization and discovery in progress via WDS link
Blinking Red	Error during initialization/discovery process
Solid Red	Irrecoverable error
Solid Green	Discovery finished via Ethernet link
Solid Orange/Amber	Discovery finished via WDS link

Left LED

The Left LED indicates the high-level state of the Wireless AP during the initialization and discovery process:

Table 8: Left LED and Wireless AP's high-level state

Left LED	Altitude AP's high-level state
Off	Initialization
Blinking Green	Network Discovery
Solid Green	Connecting with the Summit WM Controller

Left and Right LEDs

The Right LED indicates the detailed state during the initialization and discovery processes.

Table 9: Left and Right LEDs and Wireless AP's detailed state

Left LED	Right LED	Altitude AP's detailed state
Off	Off	Initialization: Power-on self-test (POST)
	Blinking Green	Initialization: Random delay
	Solid Green	Initialization: Vulnerable period
Blinking Green	Off	Network Discovery: 802.1X authentication
	Blinking Green	Network Discovery: Attempting to obtain IP address via DHCP
	Solid Green	Network Discovery: Discovered Summit WM Controller
Solid Green	Off	Connecting to Summit WM Controller: Attempting to register with the Summit WM Controller
	Blinking Green	Connecting to Summit WM Controller: Upgrading to higher version
	Solid Green	Connecting to Summit WM Controller: Configuring itself

Composite view of the three LEDs

The Center, Left and the Right LEDs work in conjunction to indicate the general, high-level state and the detailed state respectively.

The following table provides a composite view of the three LED lights of the Wireless AP's state.

Table 10: Composite view of three LED lights

Left LED	Right LED	Centre LED	Altitude AP's Detailed state
Off	Off	Blinking Green	Initialization: Power-on self-test (POST)
	Blinking Green	Blinking Green	Initialization: Random delay
	Solid Green	Blinking Green	Initialization: Vulnerable period
		Blinking Red	Reset to factory defaults
	Solid Green	Blinking Orange	WDS scanning

Table 10: Composite view of three LED lights (Continued)

Left LED	Right LED	Centre LED	Altitude AP's Detailed state
Blinking Green	Off	Blinking Green / Orange	Network discovery: 802.1x authentication
		Blinking Red	Failed 802.1x authentication
	Blinking Green	Blinking Green / Orange	Network discovery: DHCP
		Blinking Red	Default IP address
	Solid Green	Blinking Green / Orange	Network discovery: WM discovery / connect
		Blinking Red	Discovery failed
Solid Green	Off	Blinking Green / Orange	Connecting with Summit WM Controller: Registration
		Blinking Red	Registration failed
	Blinking Green	Blinking Green / Orange	Connecting with Summit WM Controller: Image upgrade
		Blinking Red	Image upgrade failed
	Solid Green	Blinking Green / Orange	Connecting with Summit WM Controller: Configuration
		Blinking Red	Configuration failed
	Blinking Green	Solid Green / Orange	AP operating normally: Forced image upgrade
		Blinking Red	Image upgrade failed

NOTE

The Left and Right LEDs turn on after the center LED. This allows you to distinguish easily between the center LED and the Left/Right LEDs.

NOTE

If the Center LED begins blinking RED, it indicates that the Wireless AP's state has failed.

NOTE

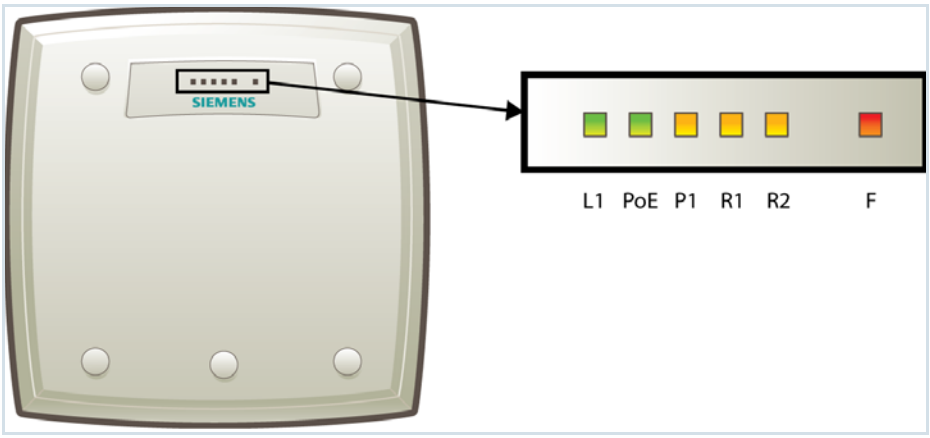
Random delays do not occur during normal reboot. A random delay only occurs after vulnerable period power-down.

The Wireless AP can be reset to its factory default settings. For more information, see "Resetting the Wireless AP to its factory default settings" on page 81.

Outdoor AP LED status

The following figure depicts the location of the LEDs on the Outdoor AP.

Figure 20: Outdoor AP LEDs



NOTE

Although Figure 5 depicts six LEDS, only R1, R2 and F LEDs are used in the current release. The remaining LEDs are disabled.

The Center, Left and the Right LEDs work in conjunction to indicate the general, high-level state and the detailed state respectively.

The following table provides a composite view of the three LED lights of the Outdoor AP's state.

Table 11: Outdoor AP LED status

R1 LED	R2 LED	F LED	Outdoor AP's detailed status
Off	Off	Blinking Red	Initialization: Power-on-self test (POST)
	Blinking Green	Blinking Red	Initialization: Random delay
	Solid Green	Blinking Red	Initialization: Vulnerable Period
		Solid Red	Reset to factory defaults
	Solid Green	Blink Red	WDS scanning
Blinking Green/ Yellow	Off	Blinking Red	Network discovery: 802.1x authentication
		Solid Red	Failed 802.1x authentication
	Blinking Green/Yellow	Blinking Red	Network discovery: DHCP
		Solid Red	Default IP address
	Solid Green/ Yellow	Blinking Red	Network discovery: WM discovery/connect
		Solid Red	Discovery failed
Solid Green	Off	Blinking Red	Connecting with WM: Registration
		Solid Red	Registration failed

Table 11: Outdoor AP LED status (Continued)

R1 LED	R2 LED	F LED	Outdoor AP's detailed status
	Blinking Green/Yellow	Blinking Red	Connecting with WM: Image upgrade
		Solid Red	Image upgrade failed
	Solid Green/ Yellow	Blinking Red	Connecting with WM: Configuration
		Solid Red	Configuration failed
		Off	AP operating and running normally: Forced image upgrade
	Blinking Green/Yellow	Solid Red	Image upgrade failed

NOTE

After discovery is finished, left and right LEDs will be Green for ethernet uplink, and Yellow for WDS uplink.

NOTE

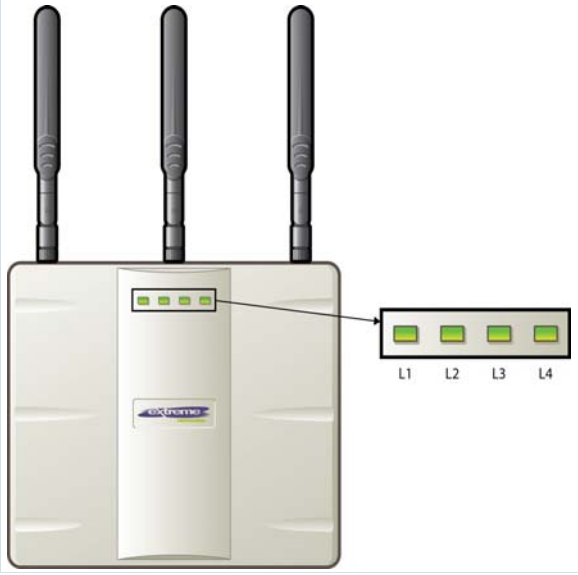
If the fatal AP error occurs, the Status LED will be solid Red.

Now you should configure the WM-AD via the Summit WM Controller using the Summit WM GUI. The following chapter explains how to configure the WM-AD.

Altitude 802.11n AP LED status

The following figure shows the location of the LEDs on the Altitude 802.11n.

Figure 21: Altitude 802.11n AP LEDs



The LEDs, L1, L3 and L4 work in conjunction to indicate the general, high-level and detailed state respectively.

After initialization and discovery is completed and the 802.11n AP is connected to the Summit WM Controller, the LEDs L3 and L4 indicate the state of the corresponding radio — L3 for Radio 5 GHz, and L4 for Radio 2.4 GHz.

The LED L2 indicates the status of the Ethernet port.

LED color codes

The AP LEDs indicate "normal-operation", "warning/special", or "failed" state of the Wireless AP in the following color codes:

- Green – Indicates the normal-operation state.
- Orange/Amber – Indicates the warning, or special state such as WDS.
- Red – Indicates the error state.
- Blinking – Indicates that the state, such as initialization, or discovery is in progress.
- Steady – Indicates that the state is stable/completed. For example, initialization finished, or discovery completed.

LED L1

The LED L1 indicates the general state of the 802.11n AP:

Table 12: LED L1 and Wireless AP's status

L1	Altitude 802.11n AP's general state
Blink Green	Initialization and discovery in progress
Blink Red	Error during initialization and discovery
Solid Green	Discovery finished; AP connected to the Summit WM Controller

LEDs L3 and L4

The LEDs L3 and L4 indicate the detailed state of the Wireless AP.

The LED1, and LEDs, L3 and L4, work in conjunction to indicate general and detailed state of the 802.11n AP.

The following table provides a composite view of the three LED lights and the corresponding state of the 802.11n AP:

Table 13: LEDs, L3, L4 and L1, and Wireless AP's detailed state

L3	L4	L1	Altitude 802.11n AP's detailed state
Off	Off	Blink Green	Initialization: Power-on self test (POST)
	Blink Green	Blink Green	Initialization: Random delay
	Solid Green	Blink Green	Initialization: Vulnerable period / WDS scanning
		Blink Red	Reset to factory defaults

Table 13: LEDs, L3, L4 and L1, and Wireless AP's detailed state (Continued)

L3	L4	L1	Altitude 802.11n AP's detailed state
Blink Green	Off	Blink Green	Network discovery: 802.1x authentication
		Blink Red	Failed 802.1x authentication
	Blink Green	Blink Green	Network discovery: DHCP
		Blink Red	Default IP address
	Solid Green	Blink Green	Network discovery: WM discovery / connect
		Blink Red	Discovery failed
Solid Green	Off	Blink Green	Connecting to WM: Registration
		Blink Red	Registration failed
	Blink Green	Blink Green	Connecting to WM: Image upgrade
		Blink Red	Image upgrade failed
	Solid Green	Blink Green	Connecting to HWX: Configuration
		Blink Red	Configuration failed
	Blink Green	Solid Green	AO operating normally: Forced image upgrade
		Blink Red	Image upgrade failed

After the initialization and discovery is completed and the 802.11n AP is connected to the Summit WM Controller, the LEDs L3 and L4 indicate the state of the corresponding radio — L3 for Radio 5 GHz, and L4 for Radio 2.4 GHz.

The following table provides a view of the LEDs, L3 and L4, and the corresponding radio state after the discovery is completed.

Table 14:

L3/L4	Radio status
Off	Radio off
Solid Blue	Radio in HT mode
Solid Green	Radio in legacy mode

LED L2

The LED L2 indicates the status of the Ethernet port:

Table 15: LED L2 and Ethernet port's status

L2	Ethernet port's status
Off	No Ethernet connection
Solid Blue	1 Gb Ethernet connection
Solid Green	100 Mb connection
Solid Orange	10 Mb connection

NOTE

10 Mb Ethernet connection is considered a warning state since it is not sufficient to sustain a single radio in the legacy 11g or 11a modes.

7 WM-AD configuration

This chapter explains how to configure the WM-AD through the Summit WM Controller using the Summit WM GUI.

The topics in this chapter are organized as follows:

- WM-AD topology overview
- Creating and configuring a Routed WM-AD
- Creating and configuring a Bridge Traffic Locally at WM WM-AD
- Creating and configuring a Bridge Traffic Locally at AP WM-AD
- Creating and configuring WDS WM-AD
- Assigning Wireless APs' radios to WM-AD
- Configuring authentication mechanism for WM-AD
- Configuring filtering rules
- Configuring privacy for WM-AD

WM-AD topology overview

Summit WM Controller, Access Points, and Software Solution provides a versatile means of mapping wireless networks to the topology of an existing wired network. This is accomplished through the assignment of WM Access Domain Services (WM-AD).

When you set up WM-AD on the Summit WM Controller, you are defining subnets for groups of wireless users. This WM-AD definition creates a virtual IP subnet where the Summit WM Controller acts as a default gateway for wireless devices.

This technique enables policies and authentication to be applied to the groups of wireless users on a WM-AD, as well as the collecting of accounting information on user sessions that can be used for billing.

When a WM-AD is set up on the Summit WM Controller:

- One or more Wireless APs (by radio) are associated with it
- A range of IP addresses is set aside for the Summit WM Controller's DHCP server to assign to wireless devices

If routing protocol is enabled, the Summit WM Controller advertises the WM-AD as a routable network segment to the wired network, and routes traffic between the wireless devices and the wired network.

Each radio on a Wireless AP can participate in up to eight WM-ADs, via the multi-SSID function.

The WM-AD topologies are classified on the basis of the following WM-AD types:

- **Routed WM-AD** – The user traffic is tunneled to the Summit WM Controller. This is the default set-up.

- **Bridge at the AP WM-AD (Bridge Traffic Locally at AP)** – The user traffic is directly bridged with VLAN at the AP's point of access (switch port).
- **VLAN bridged WM-AD (Bridge Traffic Locally at WM)** – The user traffic is tunneled to the Summit WM Controller and is directly bridged with it to a specific VLAN.

NOTE

Only the following models support VLAN bridged WM-AD (Bridge Traffic Locally at WM):
- *Summit WM2000 Controller*
- *Summit WM200 Controller*
- *Summit WM20 Controller*

- **Wireless Distribution System (WDS) WM-AD** – User traffic plies over a wireless network that uses multiple access points interconnected via wireless links. For more information, see the *Summit WM User Guide.*

SSID and AAA determine the WM-AD's network assignment. These network assignments define a framework for carrying out the authentication of the mobile devices.

Creating a new WM-AD involves the following three steps:

1 Assigning a name to the proposed WM-AD

2 Defining the topology parameters

3 Assigning Wireless AP's radios to WM-AD

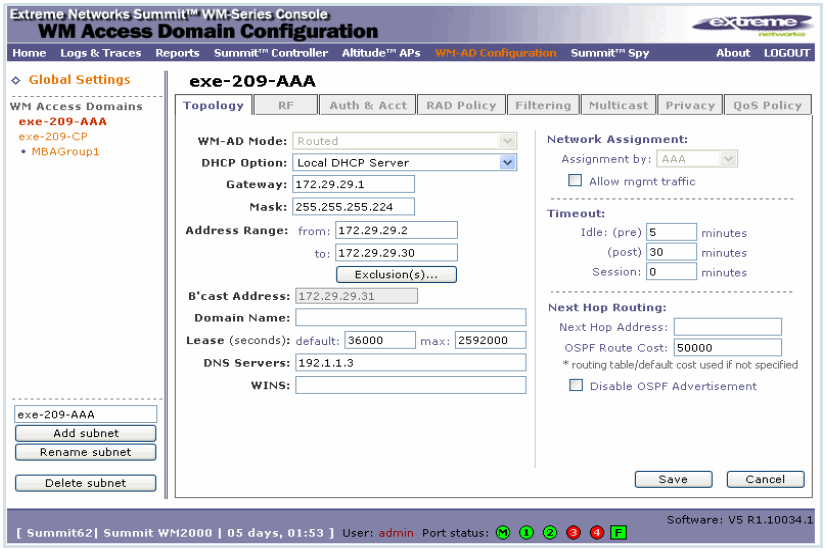
4 Configuring the WM-AD for authentication and privacy

Creating and configuring a Routed WM-AD

The user traffic is tunneled to the Summit WM Controller in Routed WM-AD type. This is the default set-up.

To create and configure a Routed WM-AD type:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.



2 In the **Add subnet** text box, type the WM-AD name.

3 Click **Add subnet**. The name is displayed in the virtual networks list and the **Topology** tab is displayed.

4 From the **WM-AD Mode** drop-down list, click **Routed**.

5 From the **DHCP** drop-down list, click one of the two options:

- **Local DHCP Server**: If you select **Local DHCP Server**, the built-in DHCP server in Summit WM Controller provides the IP addresses to the devices to the wireless network. For more information, see "DHCP for WM-AD" on page 16.
  - **Gateway** – The Summit WM Controller advertises this address to the wireless devices when they sign on and get a dynamic IP address. The gateway corresponds to the IP address that is communicated to mobile users
  - **Mask** – Subnet mask for this IP address to separate the network portion from the host portion of the address (typically 255.255.255.0).
  - **Address Range** – Range from which the IP addresses are provided to the wireless devices that would use this WM-AD. This text box (from and to) may populate automatically, if you have already provided the range while configuring the APs.
  - **B'cast Address** – Populates automatically based on the Gateway IP address and the subnet mask of the WM-AD.
  - **Domain Name** – External enterprise domain name. You must type the external enterprise domain name in this text box.
  - **Lease** – text box has two sub text boxes – **default**, and **maximum**. The two sub text boxes dictate the default and maximum time limits a wireless device can keep the DHCP server-

assigned IP address. The default value for **Lease default** is 36000 seconds (10 hours), the default value for **Lease Max** is 2539000 seconds.

- **DNS Server** – This text box relates to the IP address of the domain name server on the enterprise network.

- **Use DHCP Relay**: If you select **Use DHCP Relay**, the local DHCP server on the Summit WM Controller is disabled and the Summit WM Controller instead forwards DHCP requests to the external DHCP server for dynamic IP addresses allocation. For more information, see "DHCP relay for WM-AD" on page 17
  - **Gateway** – For more information, see Step #5 on page 93.
  - **Mask** – For more information, see Step #5 on page 93.
  - **DHCP Server** – IP address of the external DHCP server on the enterprise network.

6 From the **Network Assignment** drop-down list, select the network assignment.

The Network Assignment drop-down list gives you two options – **SSID** and **AAA**. To learn more about SSID and AAA, see "WM-AD topology overview" on page 91.

- **SSID network assignment**:
  - **Allow mgmt traffic** – If the management traffic is enabled, it overrides the built-in exception filters that prohibit traffic on the Summit WM Controller data interfaces. For more information on filters, see "Section 7.6 Configuring filtering rules for WM-AD" of the *Summit WM User Guide.*
  - **Allow 3rd Party AP** – If **Allow 3rd Party AP** is enabled, it allows for the specification of a segregated subnet for non-WM Wireless APs for providing RF services to the users while still utilizing the Summit WM Controller for user authentication and the user policy enforcement. The definition of third-party AP identification parameters allows the system to be able to differentiate the third-party AP device (and the corresponding traffic) from the user devices on that segment. Devices identified as third-party APs are considered pre-authenticated and are not required to complete the corresponding authentication verification stages defined for the users in that segment.

7 Type the values in the following three **Timeout** text boxes:

- **Idle (Pre) Timeout** – Number of seconds a user is allowed to be idle on the WM-AD before authentication.
- **Idle (Post) Timeout** – Number of seconds a user is allowed to idle on the WM-AD after authentication.
- **Session** – Maximum amount of time a session is allowed on the system. If you leave this text box blank, there will be no time limit.

8 Type the values in the **Next Hop Routing** text boxes.

- **Next Hop Address** – The next-hop IP identifies the target device to which all WM-AD (user traffic) will be forwarded to. Next-hop definition supersedes any other possible definition in the routing table.
- **OSPF Route Cost** – The OSPF cost value provides a relative cost indication to allow upstream routers to calculate whether or not to use the Summit WM Controller as a better fit, or lowest cost path to reach the devices in a particular network. The higher the cost, the less likely that the Summit WM Controller will be chosen as a route for traffic, unless that Summit WM Controller is the only possible route for that traffic.
- **Disable OSPF Advertisement** – To disable the OSPF advertisement on the WM-AD select **Disable OSPF Advertisement**.

9 To save your changes, click **Save**.

As a next step, you should configure the authentication mechanism for the WM-AD. For more information, see "Configuring authentication mechanism for WM-AD" on page 97.

Creating and configuring a Bridge Traffic Locally at WM WM-AD

NOTE

Only the following models support VLAN bridged WM-AD (Bridge Traffic Locally at WM):
- *Summit WM2000 Controller*
- *Summit WM200 Controller*
- *Summit WM20 Controller*

To configure a bridge traffic locally at WM WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the **Add subnet** text box, type the WM-AD name.

3 Click **Add subnet**. The name is displayed in the virtual networks list and the **Topology** tab is displayed.

4 From the **WM-AD Mode** drop-down list, click **Bridge Traffic Locally At WM**. The following text boxes are displayed:

- **DHCP Option** – Provides you the option of either using the external DHCP server or the local DHCP server on the Summit WM Controller. For more information, see "Creating and configuring a Routed WM-AD" on page 93.
- **VLAN ID** – The ID #of VLAN that is mapped to a Summit WM Controller interface.
- **Interface** – The name of the interface to which the VLAN is mapped.
- **Interface IP address** – The interface's IP address.
- **Mask** – The subnet mask of the WM-AD.

5 From the **Network Assignment** drop-down list, click the network assignment. For more information on network assignment, see Step 6 of "Creating and configuring a Routed WM-AD" on page 93.

6 Type the values in the following three **Timeout** text boxes – **Idle (Pre)**, **Idle (Post)**, and **Session**. For more information on **Timeout** text boxes, see Step # 7 of "Creating and configuring a Routed WM-AD" on page 93".

7 To save your changes, click **Save**.

As a next step, you should configure the authentication mechanism for the WM-AD. For more information, see "Configuring authentication mechanism for WM-AD" on page 97.

Creating and configuring a Bridge Traffic Locally at AP WM-AD

This configuration enables the WM-AD to provide branch office mode. The **VLAN ID** for the branch office is assigned by the office network administrator. The Wireless AP will operate correctly only when the **VLAN ID** is unique per AP.

To configure a Bridge traffic locally at AP WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the **Add subnet** text box, located in the lower portion of the left pane, type the WM-AD name.

3 Click **Add subnet**. The name is displayed in the virtual networks list and the **Topology** tab is displayed.

4 From the **WM-AD Mode** drop-down list, click **Bridge Traffic Locally At AP**. The **VLAN Setting** text boxes are displayed.

5 To define the VLAN setting, select one of the following:

- **Tagged** – If you select **Tagged**, type the VLAN ID in **VLAN ID** text box. The default value is 1.
- **Untagged** – If you select **Untagged**, the VLAN will be untagged.

6 To save your changes, click **Save**.

You have created a WM-AD. Now you should configure the authentication mechanism for the WM-AD.

The following section explains how to configure the authentication mechanism.

Creating and configuring WDS WM-AD

For more information, see the *Summit WM User Guide*.

Assigning Wireless APs' radios to WM-AD

Each radio of the Wireless AP can support up to eight WM-ADs (16 per Wireless AP).

The following is the list of Summit WM Controllers and the number of WM-ADs they can support.

- Summit WM2000 Controller: 64 WM-ADs
- Summit WM200 Controller: 32 WM-ADs
- Summit WM1000 Controller: 50 WM-ADs
- Summit WM100 Controller: 32 WM-ADs
- Summit WM20 Controller: 8 WM-ADs

To assign Wireless APs to a WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane **WM_AD** list, click the WM-AD you want to assign to the Wireless APs. The **Topology** tab is displayed.

3 Click the **RF** tab.

4 In the **SSID** box, type the SSID that wireless devices will use to access the Wireless AP.

5 In the **Advanced RF Settings**, select the following:

- **Suppress SSID** – Select to prevent this SSID from appearing in the beacon message sent by the Summit WM Controller. The wireless device user seeking network access will not see this SSID as an available choice, and will need to specify it.

- **Enable proprietary IE** – Select to enable radio channel reports to be sent to the Summit WM Controller for improving roaming time and reliability, as well as improving client power consumption. The Wireless AP channel report lists all channels on which the WM-AD can be found—all channels used by all APs that have been assigned to the WM-AD. The Wireless AP will provide this list in a proprietary information element to be included in Beacon and Probe response packets. By default this option is disabled. It is recommended to enable this option.
- **Enable 11h support** – Select to enable TPC (Transmission Power Control) reports. By default this option is disabled. It is recommended to enable this option.
  - **Apply power back-off** – Select to enable the Wireless AP to use reduced power (as does the 11h client). By default this option is disabled. It is recommended to enable this option.
- **Process client IE requests** – Select to enable the Wireless AP to accept IE requests sent by clients via Probe Request frames and responds by including the requested IE's in the corresponding Probe Response frames. By default this option is disabled. It is recommended to enable this option.

6 From the **Wireless APs** list, select the APs and their radios that you want to assign to the WM-AD. You can also use the **Select APs** list, to select APs and their radios by grouping:

- **All radios** – Select to assign all of the APs' radios.
- **11a radios** – Select to assign only the APs' 11a radios.
- **11b/g radios** – Select to assign only the APs' 11b/g radios.
- **local APs** - all radios – Select to assign only the local APs.
- **local APs** - 11a radios – Select to assign only the local APs' 11a radios.
- **local APs** - 11b/g radios – Select to assign only the local APs' 11b/g radios.
- **foreign APs** - all radios – Select to assign only the foreign APs.
- **foreign APs** - 11a radios – Select to assign only the foreign APs' 11a radios.
- **foreign APs** - 11b/g radios – Select to assign only the foreign APs' 11b/g radios.
- **clear all selections** – Select to clear all of the AP radio assignments.
- **original selections** – Select to return to the AP radio selections prior to the most recent save.

7 To save your changes, click **Save**.

You can view the WM-ADs that each radio is assigned to by clicking on each radio tab in the **WAP Configuration** screen.

NOTE

You can assign the radios of both the Wireless AP variants — Altitude AP and Outdoor AP — to any WM-AD.

Configuring authentication mechanism for WM-AD

The Summit WM Controller offers several authentication options. The options can be classified under network assignment types – **SSID** and **AAA** (Authentication, Authorization and Accounting).

- **SSID** – The SSID network assignment type offers the following authentication options:
  - Captive Portal – Captive Portal redirects the http clients (web browsers) to a webpage. This webpage is a login page, where the user enters the authorization information. The SSID network assignment type offers the following Captive Portal options:

- Internal Captive Portal –The Summit WM Controller uses its built-in web server and web page to accept authorization data. This web page can be customized over the Summit WM GUI.

NOTE

You must note here that the internal Captive Portal does not substitute the external RADIUS server. The RADIUS server is still needed. The internal Captive Portal within the Summit WM Controller displays the webpage to enable the users to supply their user name and password. The user name and password are sent to the configured RADIUS server for authentication.
In case of external Captive Portal, webpage authentication is performed by the external Captive Portal.

- External Captive Portal – External Captive Portal can be classified under the following two categories — External Captive Portal with Internal Authentication, and External Captive Portal with External Authentication.
  In External Captive Portal with Internal Authentication, the login page comes from the external server while the authentication is done by the existing RADIUS server.
  In External Captive Portal with External Authentication, the login page comes from the external web server and the authentication is also performed by the external authentication server.

- MAC-based authentication — The RADIUS server authorizes the client device on the basis of its MAC address. After the client device is authorized, it can go through the Captive Portal authentication. If the client device fails the Captive Portal authentication, the controller will inform the Wireless AP to disassociate the client device.

- **AAA** – The **AAA** (Authentication, Authorization and Accounting) network assignment type offers the following authentication options:
  - MAC-based authentication– The RADIUS server authorizes the client device on the basis of its MAC address.
  - 802.1x authentication – The RADIUS server authorizes the client device on the basis of its MAC address. After the client device is authorized, it can go through the Captive Portal authentication. If the client device fails the Captive Portal authentication, the controller will inform the Wireless AP to disassociate the client device.

NOTE

*If you do not assign any authentication mechanism to the new WM-AD, the **Default** filter is applied to it to ensure some minimal level of authentication. For more information, see "Configuring filtering rules for Default filter" on page 105.*

Configuring MAC-based authentication

MAC-based authentication restricts wireless device's access to the network, based on its MAC addresses. The Summit WM Controller relays the client devices' MAC address to a RADIUS server on your network following which the RADIUS server checks the address against a list of allowed MAC addresses. If the client device's MAC address matches one in the list of allowed MAC addresses in the RADIUS server, the user is granted access to the network.

NOTE

To set-up the RADIUS server for MAC-based authentication, you must set up a user account with User ID=MAC and Password= MAC or a password defined by the administrator for each user.

To define MAC-based authentication for a WM-AD:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** is displayed.

2 In the left pane, select the **SSID WM-AD** for which you want to configure the authentication mechanism. The **Topology** tab is displayed.

3 Click the **Auth & Acct** tab. The **Auth & Acct** text boxes are displayed in the right pane.

The **Auth & Acct** tab offers you the following thee options:

- **Auth** – Defines the authentication servers.
- **MAC** – Defines the servers for MAC-based authentication.
- **Acct** – Defines the accounting servers.

4 Click **MAC**. The **MAC** text boxes are displayed.

5 From the **RADIUS** drop-down list, click the server that you want to use for MAC authentication and then click **Use**. The selected server is displayed in the list of **Config'd Servers** and a red asterisk is displayed next to **Auth**, indicating that the server has been assigned.

NOTE

*The **RADIUS** drop-down list reflects the servers that are defined on the **Global Settings** screen. For more information, see the Summit WM User Guide.*

Use the **Up** and **Down** buttons to prioritize the servers for redundancy. The servers are prioritized in the sequence they are displayed in the list of **Config'd Servers**. You can change the sequence by selecting the server and then clicking on the **Up** and **Down** buttons.

6 If applicable, to use a server that has already been used for another type of authentication or accounting, click the server you want to use for MAC authentication, and then select **Use server for MAC Authentication.**

7 Type the appropriate values in the **MAC** text boxes.

- **Port** – Used to access the RADIUS server. The default is 1812.
- **# of Retries** – Number of times the Summit WM Controller will attempt to access the RADIUS server.
- **Timeout** – Maximum time for which Summit WM Controller will wait for a response from the RADIUS server before making a re-attempt.
- **NAS Identifier** – RADIUS attribute that identifies the server responsible for passing information to the designated servers and then acting on the response returned. This is an optional text box.
- **Auth Type** – Authentication protocol to be used by the RADIUS server to authenticate the wireless device users. The four options are:
  - AP – Password authentication protocol
  - CHAP – Challenge handshake authentication protocol
  - MS-CHAP – Windows-specific version of CHAP
  - MS-CHAP v2– Windows-specific version of Chap (Version 2)
- **Set as primary server** – Select to configure the RADIUS server as the primary server.

8 In the **Password** text box, type the password you want to use for MAC-based authentication requests. The **Password** is forwarded by the Summit WM Controller to the authentication server. If the **Password** box is left empty, the MAC address will act as the default password.

   Toggle between **Mask/Unmask** to view and hide the defined password.

9 To enable MAC-based authentication on roam, select the **MAC-based authentication on roam** checkbox.

NOTE

Select the MAC-based authentication on roam checkbox if you are using MAC-based authentication and if you want your clients to be authorized every time they roam to another AP. If this feature is not enabled, and MAC-based authentication is in use, the client is authenticated only at the start of a session.

10 To save your changes, click **Save**.

Configuring Internal Captive Portal authentication

In order to configure the authentication mechanism, you must first create and configure a WM-AD. For more information, see the following:

- WM-AD topology overview
- Creating and configuring a Routed WM-AD;
- Creating and configuring a Bridge Traffic Locally at WM WM-AD.

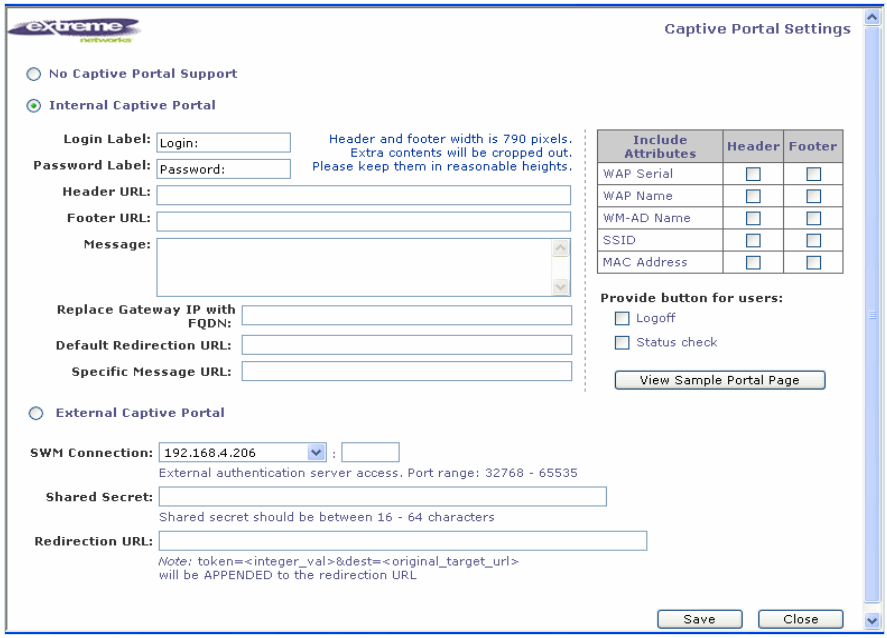
To configure internal Captive Portal:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, select the **SSID** WM-AD for which you want to configure the authentication mechanism. The **Topology** tab is displayed.

3 Click the **Auth & Acct** tab. The **Auth & Acct** screen is displayed.

4 Click **Configure Captive Portal Settings**. The **Captive Portal Configurations** screen is displayed.



5 Select the **Internal Captive Portal** option.

6 Type the values in the following text boxes:

- **Login Label** – The text that will appear as a label for the user name.
- **Password Label** –The text that will appear as a label for the user password text box.
- **Header URL** – The URL of the file to be displayed in the header of the Captive Portal screen.
- **Footer URL** – The URL of the file to be displayed in the footer of the Captive Portal screen.

NOTE

The maximum width allowed for the header and footer is 790 pixels. There is no restriction on the height. If the width of the header/footer is more than 790 pixels, the header/footer will appear truncated on the Captive Portal screen.

- **Message** – The message that you type in this text box will appear above the **Login** text box to greet the user. You can type a message explaining why the Captive Portal screen is displayed and the instructions for the user.
- **Replace Gateway IP with FQDN** – If you are using FQDN (Fully Qualified Domain Name) as the gateway address, you must type the FQDN in this text box.
- **Default Redirection URL** – The URL to which the wireless devices will be directed after authentication.
- **Specific Message URL** –

7 In the right pane, select the VSA (Vendor Specific Attributes) that you want to send to the authentication server along with other authentication details for authentication purpose.

- WAP Serial Number
- WAP Name
- WM-AD Name
- SSID

- MAC Address

The selection of these VSAs dictate with what VSA the wireless users will be identified. For example, the wireless users can be identified by which Wireless AP or WM-AD they are using.

8 To provide the users with logoff button to sign out, select **Logoff**.

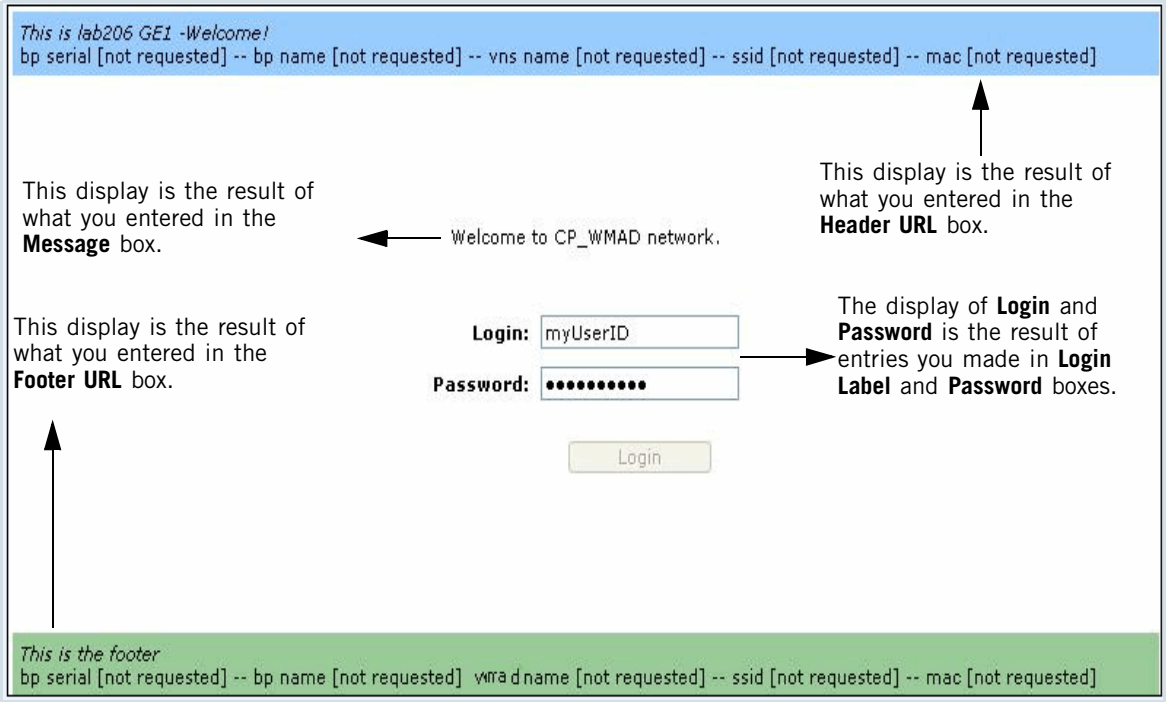
If you select **Logoff**, the users will be provided with a logoff button to sign out. The logoff button launches a pop-up logoff screen, empowering the users to control their logoff.

9 to provide the users with a status check button, select **Status check**.

The **Status check** button enables the users to monitor session statistics such as system usage and time left in a session.

10 To save your changes, click **Save**.

11 To review your Captive Portal page, click **View Sample Portal**. The login screen of the portal is displayed.


This is lab206 GE1 -Welcome!
bp serial [not requested] -- bp name [not requested] -- vns name [not requested] -- ssid [not requested] -- mac [not requested]
This display is the result of what you entered in the Header URL box.
This display is the result of what you entered in the Message box.
Welcome to CP_WMAD network.
This display is the result of what you entered in the Footer URL box.
Login: myUserID
Password: ••••••••••
The display of Login and Password is the result of entries you made in Login Label and Password boxes.
Login
This is the footer
bp serial [not requested] -- bp name [not requested] vnra d name [not requested] -- ssid [not requested] -- mac [not requested]

Configuring External Captive Portal authentication

In order to configure the authentication mechanism, you must first create and configure a WM-AD. For more information, see the following.

- WM-AD topology overview
- Creating and configuring a Routed WM-AD
- Creating and configuring a Bridge Traffic Locally at WM WM-AD.

To configure external Captive Portal:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, select the **SSID** WM-AD for which you want to configure the authentication mechanism. The **Topology** tab is displayed.

3 Click the **Auth & Acct** tab. The **Auth & Acct** screen is displayed.

4 Click **Configure Captive Portal Settings**. The **Captive Portal Configurations** screen is displayed.

5 Select the **External Captive Portal** option.

6 In the **WM Connection** drop-down list, click the Summit WM Controller's IP address.

7 In the **Port** text box, type the Summit WM Controller's port.

8 In the **Shared Secret** text box, type the password for encrypting the information exchanged between the Summit WM Controller and the external Captive Portal server.

9 In the **Redirection URL** text box, type the URL to which the wireless user will be directed after authentication.

10 To save your changes, click **Save**.

Configuring 802.1x authentication

For more information, see "Configuring privacy for AAA network assignment" on page 109.

NOTE

Since "Configuring Internal Captive Portal authentication" on page 100 Privacy for AAA network assignment is part of Privacy policies configuration, you can configure 802.1x authentication after you complete the configurations for authentication and filtering rules. However, 802.1x configuration is not necessary for getting started.

Configuring filtering rules

On a per WM-AD basis, the Summit WM Controller can be configured to apply a specific filtering policy on the user traffic that is routed through it. The filtering policies are applied after the authentication is returned.

The filter definition can be static on the Summit WM Controller itself, or the filter definition can be set to dynamically provisioned if RADIUS authentication is used. The standard RADIUS attribute can be used to identify a specific filter definition to apply to incoming/outgoing user traffic upon successful authentication of the user during authentication.

For more information, see the *Summit WM User Guide*.

Configuring filtering rules for filters in SSID network assignment

The SSID network assignment type offers the following three default filters:

- Exception
- Non-authenticated
- Default

Configuring filtering rules for Exception filter

To configure rules for the Exception filter:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **SSID WM-AD** for which you want to define the filtering rules. The **Topology** tab is displayed.

3 Click the **Filtering** tab.

4 From the **Filter ID** drop-down list, click **Exception**.

5 Define a filtering rule.

   a In the **IP/subnet:port** text box, type the destination IP address.

   You can also specify the IP range, a port designation or a port range on the IP address in the **IP/subnet:port** text box.

   b From the **Protocol** drop-down list, click the applicable protocol.

   The default is **N/A**.

   c Click **Add**. The filtering rule is displayed.

6 Define a rule to allow access to the default gateway for this WM-AD.

   a Select the **IP:Port** of the filtering rule that you defined in Step 5.

   b In the **IP/subnet:port**, type the default gateway IP address (WM-AD's IP address) that you defined in the **Topology** tab for this WM-AD.

   c Click **Add**. The rule is displayed.

7 Define more rules by carrying out Step 5 and Step 6.

8 Check the **Allow** feature for every rule you created.

   You may edit the order of the rules by selecting a filter and clicking the **Up**/**Down** buttons. The filtering rules are executed in the order that is displayed on the screen.

9 To save your changes, click **Save**. The rules for the **Exception** filter are saved.

Configuring filtering rules for a Non-authenticated filter

The rules for a Non-authenticated filter enable you to identify and manage the destinations to which a mobile device is allowed to gain access without undergoing an authentication redirection. Typically, the recommended default rule is to deny all. Administrators must define the rules that will permit users to access essential services such as the following:

- DNS
- Default Gateway (WM-AD interface IP)

Any HTTP streams requested by the client for denied targets will be redirected to the specified location. For more information, see the *Summit WM User Guide*.

To configure rules for the Non-authenticated filter.

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, select the SSID WM-AD for which you want to configure the **Non-authenticated** filtering rules. The **Topology** tab is displayed.

3 Click the **Filtering** tab.

4 From the **Filter ID** drop-down list, click **Non-authenticated**.

5 Define a filtering rule.

   a In the **IP/subnet:port** text box, type the destination IP address.

   You can also specify the IP range, a port designation or a port range on the IP address in the **IP/subnet:port** text box.

   b From the **Protocol** drop-down list, click the applicable protocol.

   The default is **N/A**.

6 For Captive Portal assignment, define a rule to allow access to the default gateway for this WM-AD:

   a Select the **IP:Port** of the filtering rule that you defined in Step 5.

   b In the **IP/subnet:port**, type the default gateway IP address (**WM-AD's** IP address) that you defined in the **Topology** screen for this WM-AD.

7 Click **Add**. The rule is displayed in the middle of the screen.

8 If applicable, define more rules by repeating Steps 5 and 6.

9 To allow the traffic between the wireless device and the network, Select **In and Out**.

10 Select the **Allow** feature for every rule you created.

11 To save your changes, click **Save**.

Configuring filtering rules for Default filter

The Default filter is applied by default (automatically) after the authentication of the wireless device under the following circumstances:

- No match is found in the Exception filter rules
- No filter attribute value is returned by the authentication server for the device
- No match is found in the filter ID values

In order to ensure that a packet is not dropped entirely under the above circumstances, the final rule in the **Default** filter must be **Allow All**.

To configure rules for the Default filter:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the WM-AD for which you want to configure the **Default** filtering rules. The **Topology** tab is displayed.

3 Click the **Filtering** tab.

4 From the **Filter ID** drop-down list, click **Default**. The default rule in the **Default** filter is displayed.

   The default rule in the **Default** filter displays a Deny All configuration. You can modify the configuration to Allow All, if it is appropriate for the network needs of the WM-AD.

   If applicable, you can create more rules for the **Default** filter.

5 Configure filtering rules for the Exception filter. For more information, see Step 5 to Step 8 of "Configuring filtering rules for Exception filter" on page 104.

6 To save your changes, click **Save**.

Configuring filtering rules for filters in AAA network assignment

The **AAA** network assignment type offers the following two default filters:

- Default
- Exception

In **AAA** network assignment type, a **Non-authenticated** filter becomes unnecessary because the users are already authenticated.

For more information, see "Configuring filtering rules for Exception filter" on page 104, and "Configuring filtering rules for Default filter" on page 105.

Now you must configure privacy for the WM-AD. The following section explains how to configure privacy.

Configuring privacy for WM-AD

Privacy is a mechanism that protects data over wireless and wired networks using encryption techniques.

The Summit WM Controller provides several privacy mechanism to protect data over the WLAN. The privacy mechanism can be classified on the basis of network assignment types — SSID and AAA.

Configuring privacy for SSID network assignment

The SSID network assignment provides three privacy options:

- None
- Static WEP
- WPA pre-shared key (PSK)

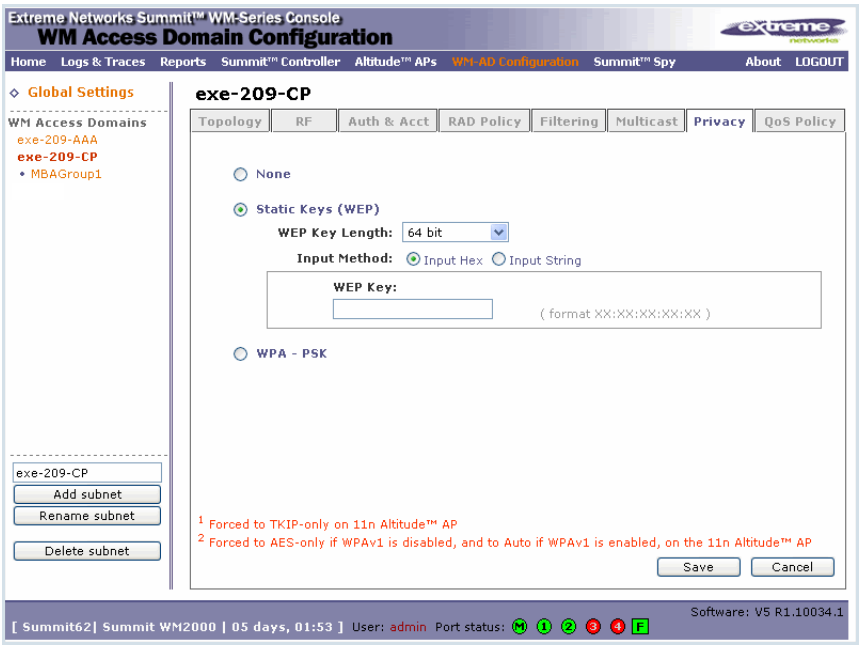
Configuring Static WEP

To configure Static WEP:

1 From the main menu, click **WM-AD Configuration**. **The WM-AD Configuration** screen is displayed.

2 In the left pane, click the **SSID WM-AD** for which you want to configure the **Static WEP** privacy. The **topology** tab is displayed.

3 Click the **Privacy** tab.


Extreme Networks Summit™ WM-Series Console
WM Access Domain Configuration
Home Logs & Traces Reports Summit™ Controller Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Global Settings
WM Access Domains
exe-209-AAA
exe-209-CP
MBAGroup1
exe-209-CP
Topology RF Auth & Acct RAD Policy Filtering Multicast Privacy QoS Policy
None
Static Keys (WEP)
WEP Key Length: 64 bit
Input Method: Input Hex Input String
WEP Key:
(format XX:XX:XX:XX:XX)
WPA - PSK
exe-209-CP
Add subnet
Rename subnet
Delete subnet
1 Forced to TKIP-only on 11n Altitude™ AP
2 Forced to AES-only if WPAv1 is disabled, and to Auto if WPAv1 is enabled, on the 11n Altitude™ AP
Save
Cancel
Software: V5 R1.10034.1
[Summit62| Summit WM2000 | 05 days, 01:53] User: admin Port status:

4 Select **Static Keys (WEP)**.

5 Type the values in the following text boxes:

- **WEP Key Length** – Size of a WEP Key.
- **Input Hex** – If you enable **Input Hex**, the **WEP Key** text box is displayed. Type the **WEP Key** manually in this text box.
- **Input String** – If you select **Input String**, the following two text boxes are displayed –**Strings** and **WEP Key**. Type the secret WEP Key string in the **WEP Key String** text box. The **WEP Key** text box is automatically filled by the corresponding Hex code.

6 To save your changes, click **Save**.

Configuring WPA-PSK

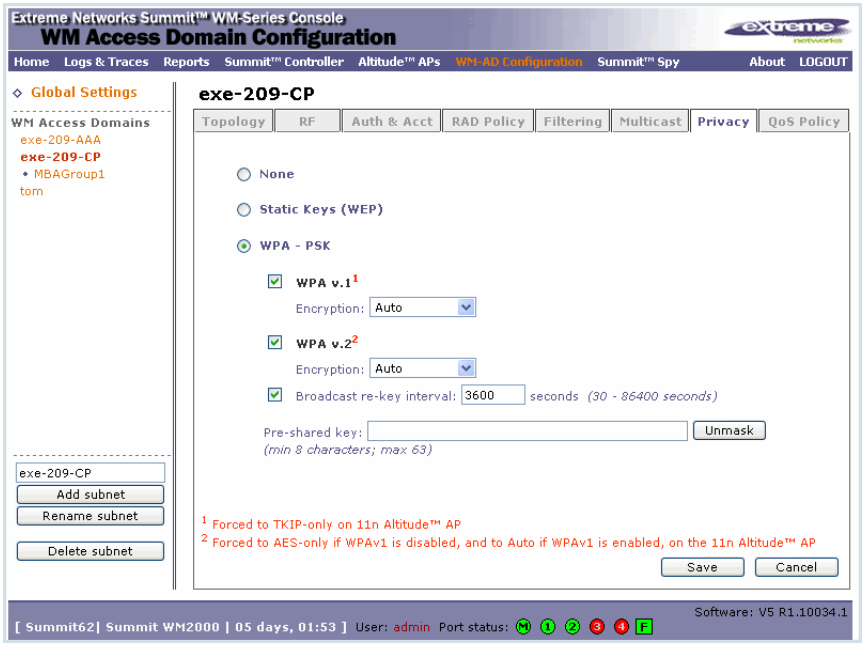
To configure WPA-PSK privacy:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **SSID WM-AD** for which you want to configure WPA-PSK privacy. The **Topology** tab is displayed.

3 Click the **Privacy** tab.

4 Select **WPA-PSK**.


Extreme Networks Summit™ WM-Series Console
WM Access Domain Configuration
Home Logs & Traces Reports Summit™ Controller Altitude™ APs WM-AD Configuration Summit™ Spy About LOGOUT
Global Settings
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exe-209-AAA
exe-209-CP
MBAGroup1
tom
exe-209-CP
Add subnet
Rename subnet
Delete subnet
exe-209-CP
Topology RF Auth & Acct RAD Policy Filtering Multicast Privacy QoS Policy
None
Static Keys (WEP)
WPA - PSK
WPA v.1 1
Encryption: Auto
WPA v.2 2
Encryption: Auto
Broadcast re-key interval: 3600 seconds (30 - 86400 seconds)
Pre-shared key:
Unmask
(min 8 characters; max 63)
1 Forced to TKIP-only on 11n Altitude™ AP
2 Forced to AES-only if WPAv1 is disabled, and to Auto if WPAv1 is enabled, on the 11n Altitude™ AP
Save
Cancel
Software: V5 R1.10034.1
[Summit62| Summit WM2000 | 05 days, 01:53] User: admin Port status:

5 Select **WPA v1**.

If you select WPA v1, its subordinate **Encryption** drop-down menu is enabled.

The **Encryption** drop-down menu offers you the following two options:

- **Auto** – If you click **Auto**, the Wireless AP advertises both TKIP and **CCMP** (counter mode with cipher block chaining message authentication code protocol). CCMP is an IEEE 802.11i encryption protocol that uses the encryption cipher AES (Advanced Encryption Standard). **Auto** is the default.
- **TKIP only** – If you click **TKIP only**, the Wireless AP advertises TKIP as an available encryption protocol. It will not advertise CCMP.

6 Select **WPA v2**.

If you select WPA v2, its subordinate **Encryption** drop-down menu is enabled.

The Encryption drop-down menu offers you the following two options:

- **Auto** – If you click **Auto**, the Wireless AP advertises both TKIP and **CCMP** (counter mode with cipher block chaining message authentication code protocol). CCMP is an IEEE 802.11i encryption protocol that uses the encryption cipher AES (Advanced Encryption Standard). **Auto** is the default.
- **AES only** – If you click **AES**, the Wireless AP advertises **CCMP** as an available encryption protocol. It will not advertise TKIP.

7 To enable re-keying after a time interval, select **Broadcast re-key interval**.

If this feature is not selected, the broadcast encryption key is never changed and the Wireless AP will always use the same broadcast key for broadcast/multicast transmissions. This will compromise the security for wireless communications.

8 In the **Broadcast re-key interval** text box, type the time interval after which you want the broadcast encryption key to be changed automatically. The default is 3600.

9 In the **Pre-shared Key** text box, type the shared secret key that is to be used between the wireless device and the Wireless AP.

The shared secret key is used to generate the 256 bit key.

10 To confirm your entry, click **Unmask**. The shared key entry is displayed.

You must always unmask the shared secret key before you save your settings.

11 To save your changes, click **Save**.

Configuring privacy for AAA network assignment

The AAA (Authentication, Authorization and Accounting) assignment provides following privacy mechanisms:

- Static keys (WEP)
- Dynamic WEP keys
- Wi-fi Protected Access (WPA) version 1 with encryption by temporal key integrity protocol (TKIP)
- Wi-fi Protected Access (WPA) version 2 with encryption by advanced encryption standard with counter-mode/CBC-MAC protocol (AES-CCMP)

Configuring Static WEP

To configure Static WEP:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **AAA WM-AD** for which you want to configure the **Static WEP** privacy. The **topology** tab is displayed.

3 Click the **Privacy** tab.

4 Repeat Step 4 to Step 6 of "Configuring Static WEP" on page 106.

Configuring Dynamic WEP

The dynamic key WEP mechanism changes the key for each user and each session.

To set up Dynamic WEP privacy:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **AAA WM-AD** for which you want to configure the Dynamic WEP privacy. The **Topology** tab is displayed.

3 Click the **Privacy** tab.

4 Select **Dynamic Keys**.

5 To save your changes, click **Save**.

Configuring Wi-fi Protected Access (WPA v1 and WPA v2) privacy

WPA v1 and WPA v2 adds authentication to WEP encryption and key management. The authentication portion of WPA for AAA is in enterprise mode. Key features of WPA privacy include:

- Specifies 802.1x with extensible authentication protocol (EAP)

- Uses RADIUS protocols for authentication and key distribution; therefore, requires a RADIUS or other authentication server.
- Centralizes management of user credentials.

The WPA authentication process involves the following steps:

- **Step 1** – The wireless device associates with Wireless AP.
- **Step 2** – The Wireless AP blocks the wireless device's network access while the authentication process is carried out. The Summit WM Controller sends the authentication request to the RADIUS authentication server.
- **Step 3** – The wireless device provides credentials that are forwarded to the authentication server through the Summit WM Controller.
- **Step 4** – If the wireless device is not authenticated, the device remains blocked from the network.

For more information, see the *Summit WM User Guide*.

.**To configure WPA privacy**:

1 From the main menu, click **WM-AD Configuration**. The **WM-AD Configuration** screen is displayed.

2 In the left pane, click the **AAA WM-AD** for which you want to configure the Dynamic WEP privacy. The **Topology** tab is displayed.

3 Click the **Privacy** tab.

4 Select **WPA**. The **WPA** text boxes are displayed.

5 Select one of the following:

- **WPA v1**:
  - **Auto** – If you click **Auto**, the Wireless AP will advertise both TKIP and **CCMP** (counter mode with cipher block chaining message authentication code protocol).
  - **TKIP only** – If you click **TKIP only**, the Wireless AP will advertise TKIP as an available encryption protocol. It will not advertise CCMP.
- **WPA v2**:
  - **Auto**: For more information, see the description of **Auto** under **WPA v1**.
  - **TKIP only**: For more information, see the description of **TKIP only** under **WPA v1**.

If you select WPA v1, its **Encryption** drop-down menu is enabled. The **Encryption** drop-down menu offers the following two options:

6 From the **Key Management options**, select one of the following key-management options:

- **None** – The mobile units (client devices) performs a complete 802.1X authentication each time it associates or connects to a Wireless AP.
- **Opportunistic Keying** – Enables secure fast roaming (SFR) of mobile units. For more information, see the *Summit WM User Guide*.
- **Pre-authentication** – Enables seamless roaming. For more information, see the *Summit WM User Guide*.
- **Opportunistic Keying & Pre-auth** – For more information, see the *Summit WM User Guide*.

7 For re-keying after a time interval, select **Broadcast re-key interval**.

If this feature is not enabled, the broadcast encryption key is never changed and the Wireless AP will always use the same broadcast key for broadcast/multicast transmissions. This will compromise the security for wireless communications.

8 In the **Broadcast re-key interval** text box, type the time interval after which you want the broadcast encryption key to be changed automatically. The default is 3600.

9 To save your changes, click **Save**.

You have completed the WM-AD configuration.

Now you should configure the Summit WM Controller's availability and mobility features. The following chapter describes how to configure the Summit WM Controller's availability and mobility features.

8 Availability and Mobility configuration

The chapter describes how to configure the Summit WM Controller's availability and mobility features.

The topics in this chapter are organized as follows:

- Availability overview
- Configuring availability feature
- Mobility overview
- Configuring mobility

Availability overview

The Summit WM Wireless LAN (WLAN) Solution's availability feature maintains service availability in the event of a Summit WM Controller outage.

The availability feature links two Summit WM Controllers to form a pair in order to share information about their Wireless APs. If one Summit WM Controller fails, its Wireless APs are allowed to connect to the other Summit WM Controller.

The Wireless APs that connect to a backup Summit WM Controller during a failover are assigned to the WM-AD that is defined in the Summit WM Controller's default Wireless AP configuration. If the default Wireless AP configuration has no WM-AD assigned, the failover Wireless APs will not provide service. Therefore it is very important to define a default Wireless AP configuration on all Summit WM Controllers.

Configuring availability feature

Before you begin the availability configuration, you must ensure:

- A network connection exists between the two Summit WM Controllers. This connection is used to enable the availability link between the Summit WM Controllers. The availability link is established on port 13907.
- A DHCP server for the Wireless AP subnets is setup to support "Option 78 for SLP", so that it points to the IP addresses of the physical interfaces on both the Summit WM Controllers.

High-level overview of the availability configuration process

The following is a high-level overview of the availability configuration process:

- Step 1 – Define a WM-AD with the same SSID on each Summit WM Controller. For more information on how to define a WM-AD, see Chapter 7, "WM-AD configuration."
- Step 2 – Assign radios to WM-AD and confirm **Poll Timeout** value is 15 seconds on the **Wireless AP Default** settings screen.

- Step 3 – Assign the Wireless APs to their home Summit WM Controllers.
- Step 4 – Enable both the Summit WM Controllers as an availability pair.
- Step 5 – Define a primary Summit WM Controller.
- Step 6 – Select one of the security mode options:
  - **Allow all Wireless APs to connect** – If the Summit WM Controller does not recognize the Wireless AP's serial number, it sends a default configuration to the Wireless AP. If the Summit WM Controller recognizes the serial number, it sends the specific configuration (port and binding key) set to the Wireless AP.
  - **Allow only approved Wireless APs to connect** – If the Summit WM Controller does not recognize the Wireless AP's serial number, it prompts you to create a configuration. If the Summit WM Controller recognizes the serial number, it sends the configuration (port and binding key) to the Wireless AP.

This section is organized under the following sub-sections:

- Defining a WM-AD with the same SSID on both the Summit WM Controllers
- Assigning radios to WM-AD and confirming the Poll Timeout value on Altitude APs screen
- Assigning the Wireless APs to their home Summit WM Controller
- Enabling availability pair, defining primary Summit WM Controller, and selecting security mode
- Viewing the Wireless AP availability display
- Viewing the active Wireless APs report

Defining a WM-AD with the same SSID on both the Summit WM Controllers

Step 1 of the availability configuration process is to define WM-AD with the same SSID on both the Summit WM Controllers.

For information, see See Chapter 7, "WM-AD configuration."

NOTE

You must use the same SSID on both the primary and the secondary Summit WM Controllers.

Assigning radios to WM-AD and confirming the Poll Timeout value on Altitude APs screen

Step 2 of the availability configuration process is to assign radios to the WM-AD, and confirm the **Poll Timeout** value is 15 (seconds) on the **Altitude APs** screen.

To assign radios to WM-AD and change the poll timeout value:

1. Login on both the Summit WM Controllers.
2. From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.
3. In the left pane, click **WAP Default Settings**. The **WAP Default Settings** screen is displayed.
4. Click the **Standard WAP Defaults** tab. The **Standard WAP Defaults** screen is displayed.

5 In the **AP Properties** section, confirm that the **Poll Timeout** is set to its default value i.e., 15. If the **Poll Timeout** value is not set to its default value, change it to the default value.

The **Poll Timeout** is the time in which the polling to the Summit WM Controller 'times out'.

If the **Poll Timeout** value is less than 15 (seconds), the Wireless AP failover will not succeed because the secondary controller will not be 'ready' to accept the failover APs. The secondary controller takes around 12 to 14 seconds after the primary controller goes down to be 'ready' to accept the failover Wireless APs.

If the **Poll Timeout** value is more than 15 (seconds), the Wireless APs failover will be unnecessarily delayed, because the Wireless APs will continue polling the primary controller even though the secondary controller is 'ready' to accept them as the failover APs.

6 Click the **Common Configuration** tab. The **Common Configuration** screen is displayed.

7 In the **WM-AD Assignment** section, select the WM-AD that you have defined for availability.

8 To assign 11b/g and 11a radios to the WM-AD, select the corresponding radio checkboxes.

9 To save your changes, click **Save**.

10 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

11 Repeat Step 3 to 10.

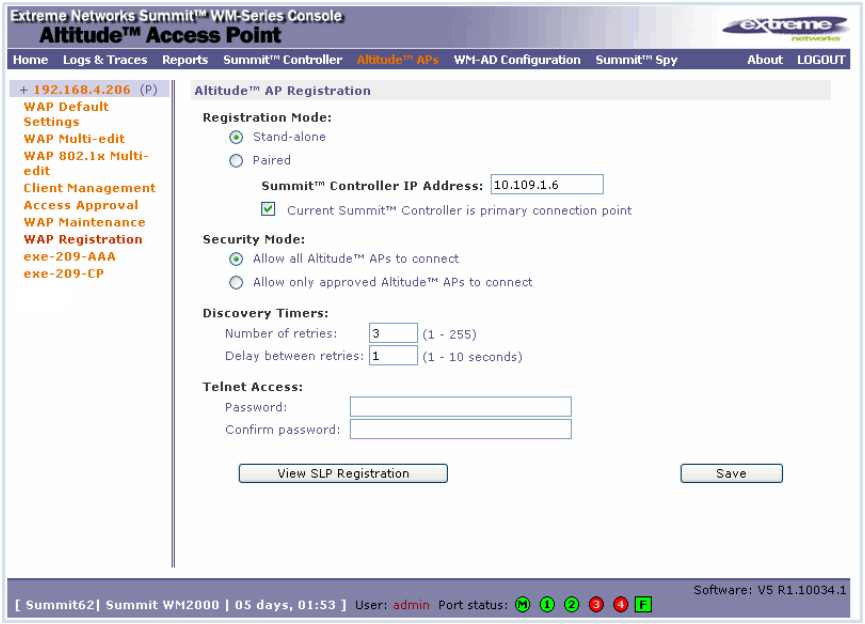
Assigning the Wireless APs to their home Summit WM Controller

Step 3 of the availability configuration process is to assign the Wireless APs to their home Summit WM Controller.

1 Login on both the Summit WM Controllers.

2 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

3 In the left pane, click **WAP Registration**. The **Altitude AP Registration** screen is displayed.



4 In the **Registration Mode** section, click **Stand-alone**.

5 In the **Security Mode** section, click **Allow only approved Altitude APs to connect**.

6 From the main menu of the secondary Summit WM Controller, click **Altitude APs.** The **Altitude AP** screen is displayed.

7 Repeat Step 3 to Step 5.

8 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

9 In the left menu, click **Access Approval**. The **Access Approval** screen is displayed.

10 Check the status of every Wireless AP and approve all those that should be connected to the primary Summit WM Controller.

NOTE

You must delete all such Wireless APs that are in pending state and you do not intend to approve them.

11 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

12 Repeat Step 9 to Step 10.

13 To save your changes, click **Save**.

NOTE

*After you have assigned Wireless APs to their home Summit WM Controllers, you must check **Active Wireless APs Report** screen to ensure that all those approved APs are indeed connected to their home Summit WM Controller. For more information, see "Viewing the active Wireless APs report" on page 118.*

Enabling availability pair, defining primary Summit WM Controller, and selecting security mode

Steps 4, 5 and 6 of the availability configuration process involve enabling availability pair, defining primary Summit WM Controller, and selecting security mode.

To enable the availability pair, define the primary Summit WM Controller, and select the security mode:

1 Login on both the Summit WM Controllers.

2 From the main menu of the primary Summit WM Controller, click **Altitude AP**. The **Altitude AP** screen is displayed.

3 In the left pane, click **WAP Registration**. The **Altitude WAP Registration** screen is displayed.

4 In the **Registration mode** section, click **Paired**.

5 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

6 In the **Registration mode** section, click **Paired**.

7 From the main menu of the primary Summit WM Controller, click **Altitude APs**.

8 In the **Summit WM Controller IP Address** text box, type the IP address of the physical port of the secondary Summit WM Controller.

9 Select **Current Summit WM Controller is primary connection point**.

10 From the main menu of the secondary Summit WM Controller, click **Altitude APs**. The **Altitude AP** is displayed.

11 In the **Summit WM Controller IP Address**, type the IP address of the management port or physical port of the primary Summit WM Controller.

12 Clear the **Current Summit WM Controller is primary connection point** checkbox.

13 From the main menu of the primary Summit WM Controller, click **Altitude APs**. The **Altitude AP** screen is displayed.

14 In the **Security Mode**, select one of the security mode options. For more information, see Page 118.

15 To save your changes in the primary Summit WM Controller, click **Save**.

16 Open the **Altitude APs** of the secondary Summit WM Controller.

17 In the **Security Mode**, select one of the security mode options. For more information, see page 118.

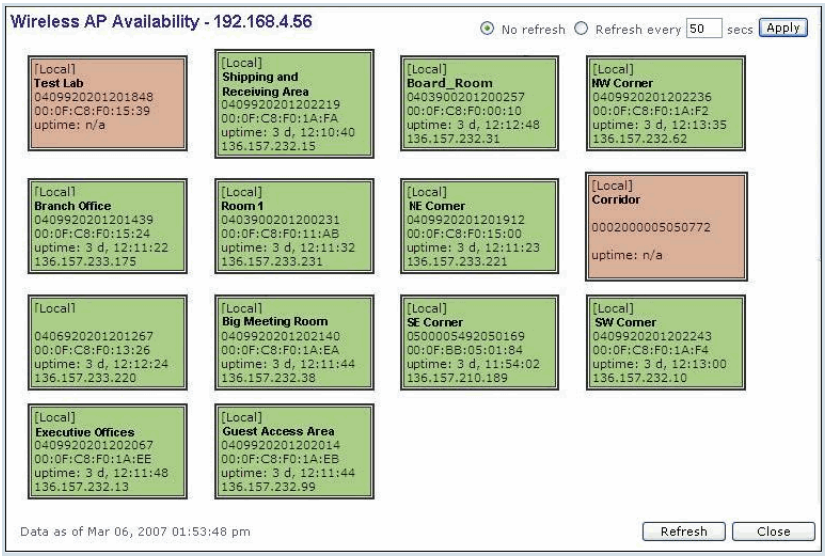
18 To save your changes in the secondary Summit WM Controller, click **Save**.

Viewing the Wireless AP availability display

The Wireless AP availability display provides the active connection state of an Wireless AP.

The display depicts the Wireless APs as color-coded boxes — Green and Red — on the screen:

- Green – The Wireless AP is configured on the Summit WM Controller and is currently connected.
- Red – The Wireless AP is configured on the Summit WM Controller but is currently not connected (not available to service this Summit WM Controller).



To view the Wireless AP availability display:

1 From the main menu, click **Reports**. The **Reports & Displays** screen is displayed.

2 In the **List of Displays**, click **Wireless WAP Availability**. The **Wireless WAP Availability** display appears.

Viewing the active Wireless APs report

To view the active Wireless APs report:

1 From the main menu, click **Reports & Displays**. The **Reports & Display** screen is displayed.

2 In the **List of Displays**, click **Active Wireless APs**. The **Active Wireless APs** display appears.

Mobility overview

The Summit WM Wireless LAN (WLAN) Solution allows multiple Summit WM Controllers (up to 12) on a network to discover each other and exchange information about a client session. This feature enables a wireless device user to roam seamlessly between Wireless APs that are registered with separate Summit WM Controllers.

The solution introduces the concept of a mobility manager and mobility agents; the concept requires designating one Summit WM Controller as the mobility manager and other Summit WM Controllers as mobility agents.

The wireless device keeps the IP address, WM-AD assignment, and filtering rules it received from its home Summit WM Controller — the Summit WM Controller to which it was first connected.

The WM-AD on each Summit WM Controller must have the same SSID and RF privacy parameter settings for seamless roaming to occur.

The mobility manager and the mobility agents use the following two options for the discovery process.

- SLP with DHCP Option 78. The mobility agent on each Summit WM Controller will discover the address of the mobility manager using Option 78.
- Direct IP address option: Defined while configuring the mobility agent. By explicitly defining the manager's IP address while configuring the agents, enables the manager and agents to find each other directly without using the SLP discovery mechanisms.

NOTE

In order to provide tighter control of the registration steps for multi-domain installations, direct IP address definition option is recommended.

The mobility manager:

- Defines the registration behavior for a multi-Summit WM Controller mobility domain set:
  - Open mode – A new agent automatically registers itself with the mobility manager and immediately becomes part of the mobility domain.
  - Secure mode – The manager does not allow a new agent to automatically register. Instead, the connection with the new agent is placed in pending state until the administrator approves the connection.
- Listens for connection attempts from mobility agents.
- Establishes connection and sends a message to the mobility agent specifying the heartbeat interval and the IP address in **Mobility Permission List**.
- Sends regular Heartbeat messages containing wireless device session changes and waits for a return update message.

The agent:

- Uses SLP or a statically configured IP address to locate the manager.
- Uses the information from every heartbeat message received to update its own tables and updates the manager with the information on the wireless device users and data tunnels it is managing.

If a connection to a manager is lost:

- Agent to agent connections still remain active, allowing seamless roaming to continue.
- The data link between the agents remains active after the loss of the manager. The agents continue to use the last set of mobility location list to service known users.
  - Existing users – Remain in mobility scenario and if the users are known to mobility domain, they are able to continue roaming between the agents.
  - New users – Become local at the attaching agent. Roaming to another agents resets the session.
- Any user that roamed away from their home Wireless AP is terminated and must reconnect, re-authenticate and obtain a new IP address.

Configuring mobility

To configure mobility feature, you must define one Summit WM Controller as the mobility manager and other Summit WM Controllers as mobility agents.

Configuring a Summit WM Controller as a mobility manager

To configure Summit WM Controller as a mobility manager:

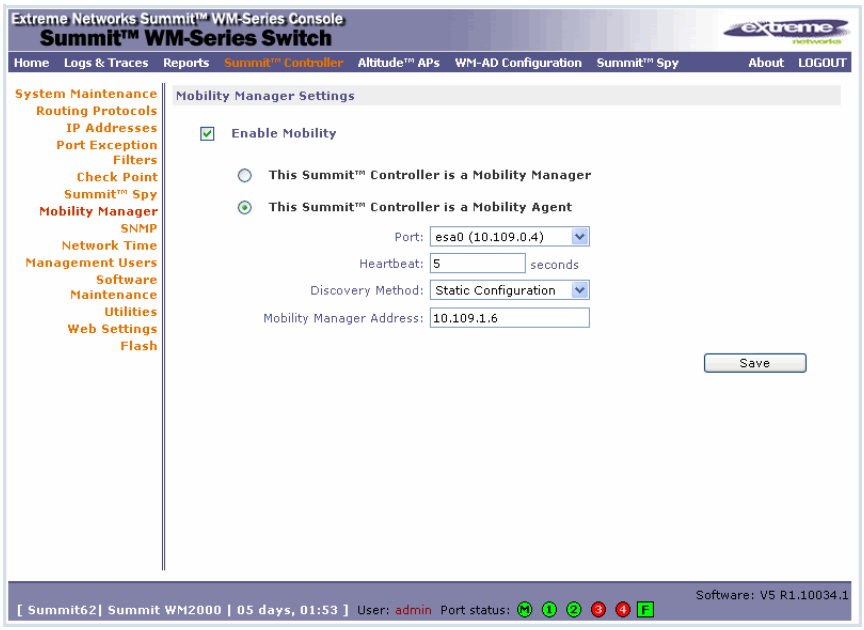
1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 In the left pane, click **Mobility Manager**. The **Mobility Manager Settings** screen is displayed.

NOTE

*The **Mobility Manager** link is not displayed in the left pane with the **demo** license.*

3 To enable mobility for this Summit WM Controller, select the **Enable Mobility** checkbox. The mobility options are displayed.



4 Select the **This Summit Controller is a Mobility Manager** option. The mobility manager options are displayed.

5 In the **Port** drop-down list, click the interface of the Summit WM Controller that is to be used as the mobility manager.

Ensure that the selected interface is routable on the network.

6 In the **Heartbeat** text box, type the time interval (in seconds) at which the mobility manager sends a heartbeat message to the agent. The default is **5** seconds.

7 In the **SLP Registration** drop-down list, click one of the following:

- Enabled – If you select Enabled in the SLP Registration drop-down list, the mobility agents discover the mobility manager with the help of SLP DA.
- **Disabled** – If you select **Disabled** in the **SLP Registration** drop-down list, the mobility agents will use the static IP of the mobility manager for the mobility manager discovery.

If you select **Enabled** in the **SLP Registration** drop-down list, you must configure SLP on the network.

NOTE

*If you have configured DHCP service in Windows 2003 server, you must make sure to enable **Option 78 SLP DA** in **Configure Options** window. For more information on how to configure Option 78 SLP DA, see "Configuring DHCP in Windows 2003 Server" on page 53.*

8 In the **Add** text box, type the IP address of the Summit WM Controller mobility agent. The IP address is displayed in the **Permission List** box.

   You can add as many agents you want by repeating Step 8.

9 In the **Permission List** box, select the IP addresses you want to approve.

10 Click **Approve**. The IP addresses are approved.

11 In the **Security Mode** section, select either of the two options:

- **Allow all mobility agents to connect** – A new agent automatically registers itself with the mobility manager and becomes part of the mobility domain.
- **Allow only approved mobility agents to connect** – The manager does not allow a new agent to automatically register. Instead, the connection with the new agent is placed in pending state until the administrator approves it.

12 To save your changes, click **Save**.

Configuring a Summit WM Controller as a mobility agent

To configure Summit WM Controller as a mobility agent:

1 From the main menu, click **Summit Controller**. The **Summit Controller** screen is displayed.

2 In the left pane, click **Mobility Manager**. The **Mobility Manager Settings** screen is displayed.

3 To enable mobility for this Summit WM Controller, select **Enable Mobility**. The mobility options are displayed.

4 Select **This Summit Controller is a Mobility Agent**. The mobility agent options are displayed.

5 In the **Port** drop-down list, select the interface of the Summit WM Controller that is to be used as the mobility agent.

   Ensure that the selected interface is routable on the network.

6 In the **Heartbeat** text box, type the time interval (in seconds) for which the mobility agent should wait for the connection establishment response before trying again. The default is 60.

7 In the **Discovery Method** drop-down list, select one of the following:

- **SLPD** (Service Location Protocol Daemon) – Enables the discovery of mobility manager Summit WM Controller, using SLP. The mobility manager's address must be configured on the network using SLP when selecting this option.
- **Static Configuration** – allows the mobility agent to discover the mobility manager without the SLP support.
  - If you select **Static Configuration**, the **Mobility Manager Address** text box is displayed.
  - In the **Mobility Manager Address** text box, type the IP address of the Summit WM Controller that will serve as the mobility manager.

8 To save your changes, click **Save**.

Viewing the Mobility Manager display

If you have configured a Summit WM Controller as a mobility manager, two additional displays appear on the **Reports & Displays** screen:

- **Client Location in Mobility Zone**
- **Mobility Tunnel Matrix**

To view mobility manager display:

1 From the main menu, click **Reports**. The **Reports & Displays** screen is displayed.

2 Click the appropriate mobility manager display.

- **Client Location in Mobility Zone** – Displays the active wireless clients and their status.

You can perform the following actions on the **Client Location in Mobility Zone** display screen.

- Sort this display by home or foreign Summit WM Controller.
- Search for a client by MAC address, user name, or IP address.
- Define the refresh rates for the display.
- Export the information on the display screen as an .xml file

- **Mobility Tunnel Matrix** – Displays the state of inter-Summit WM Controller tunnels as well as the relative loading for user distribution across the mobility domain.

The **Mobility Tunnel Matrix** display provides the following information:

- Tunnel uptime
- Number of clients roamed (mobility loading)
- Local Summit WM Controller loading
- Mobility membership list

Both displays depict the state of the tunnels in color codes:

- Green – Indicates the mobility manager is in communication with an agent and the data tunnel has been successfully established.
- Yellow – Indicates the mobility manager is in communication with an agent but the data tunnel is not yet successfully established.
- Red – Indicates the mobility manager is not in communication with an agent and there is no data tunnel.

Viewing Mobility Agent display

If you have configured a Summit WM Controller as a mobility agent, an additional display — **Agent Mobility Tunnel Matrix** — appears on the **Reports & Displays** screen.

To view mobility agent display:

1 From the main menu, click **Reports**. The **Reports & Displays** screen is displayed.

2 Click **Agent Mobility Tunnel Matrix**. The mobility agent display screen appears.

The mobility agent display depicts the number of mobility clients in each data tunnel and shows each tunnel's uptime in color codes:

- Green – Indicates the mobility agent is in communication with the mobility manager and the data tunnel has been successfully established.
- Yellow – Indicates the mobility agent is in communication with the mobility manager, but the data tunnel is not yet successfully established.
- Red – Indicates the mobility agent is not in communication with the mobility manager and there is not data tunnel.

In addition, the display also depicts the mobile clients' location information. You can look for a specific mobile client by MAC address, IP address, or user name.

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